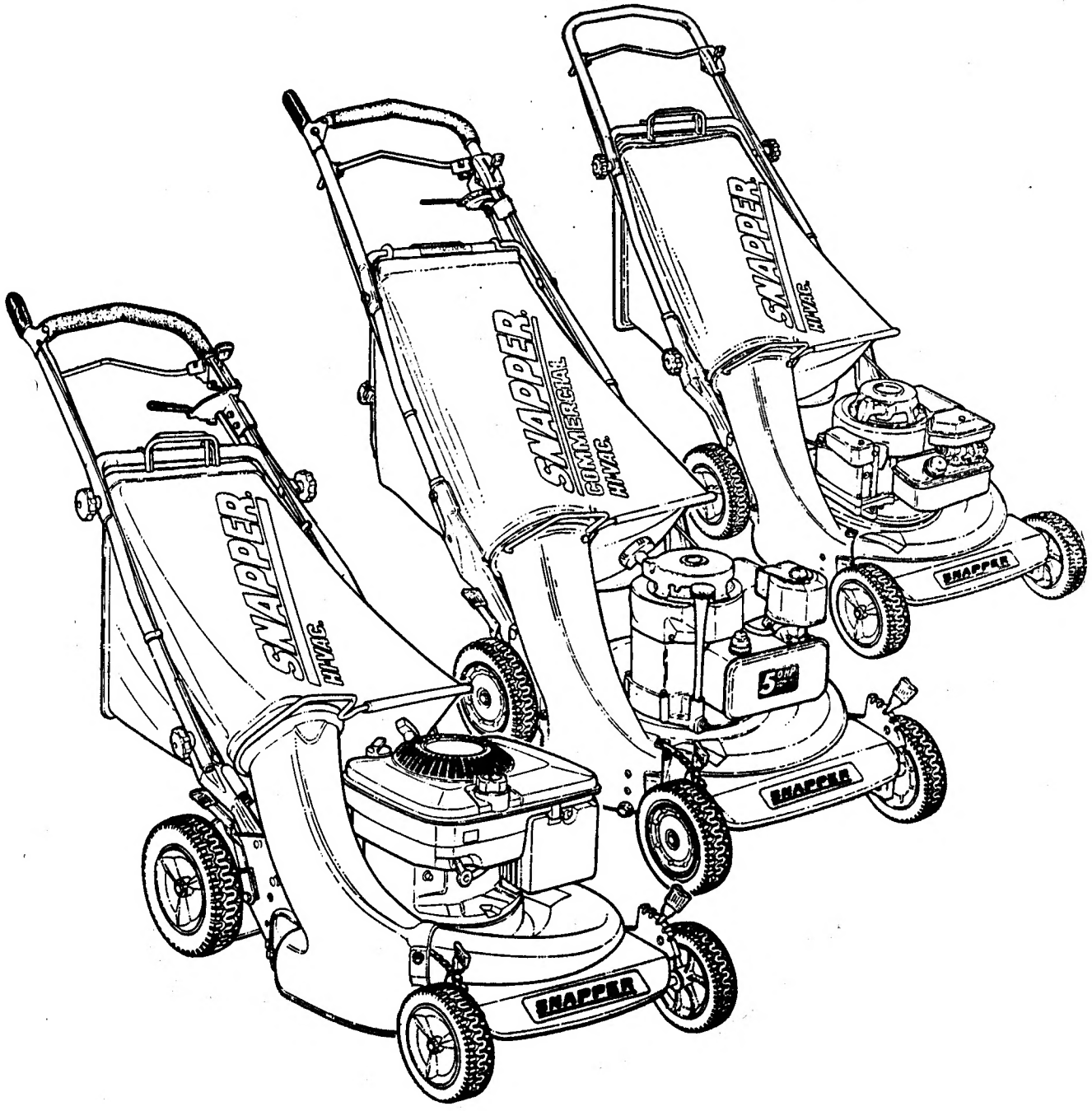
Service Manual for

SNAPPER®

WALK BEHIND MOWERS



SNAPPER POWER EQUIPMENT
McDonough,GA•30253
E/I A FUQUA INDUSTRIES Company

#0-7001 (Rev. 2, 3/92)

TABLE OF CONTENTS

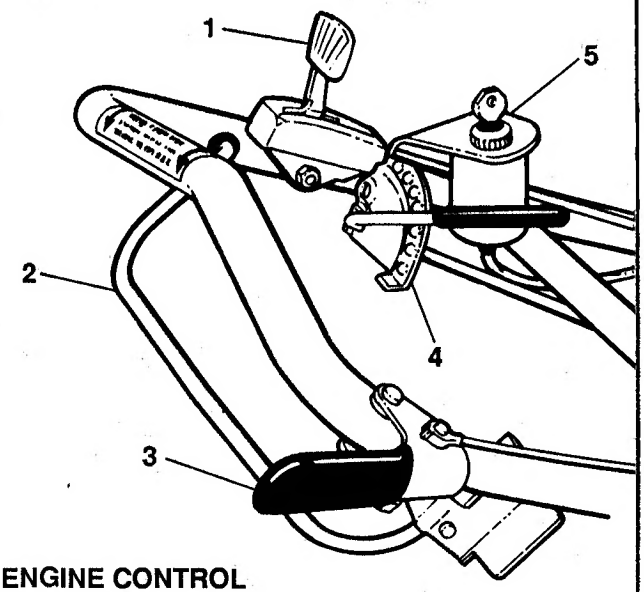
Section I - OPERATING INSTRUCTIONS

NOTE: The operational information in this Section is generic in nature and intended ONLY as an operational overview for SNAPPER WALK BEHIND MOWERS. Specific operating instructions for each series and model of the SNAPPER WALK BEHIND MOWER can be found in the OPERATORS MANUAL accompanying each type mower.

1.1 BEFORE OPERATING:

Keep the important safety instructions in mind when operating the mower. For easier starting, move the mower to an area where the cutting blade can turn free of tall grass. Know beforehand how to stop the mower in preparation for possible emergencies. The engine (and blade) is stopped by releasing the BLADE CONTROL or by pulling the ENGINE CONTROL rearward to STOP position. Forward motion of self-propelled models is stopped by releasing the WHEEL DRIVE control. Refer to Figure 1.1 for location of these controls.

NOTE:
ON THE **SNAPPER BBC MODELS** THE ENGINE IS STOPPED BY USE OF THE ENGINE CONTROL (#1) ONLY.



1. **ENGINE CONTROL**
2. **BLADE CONTROL**
3. **WHEEL DRIVE CONTROL**
4. **GROUND SPEED CONTROL**
5. **ELECTRIC START KEYSWITCH**

LOCATION OF CONTROLS
FIGURE 1.1

1.2 PRE-START CHECKS

Before each start-up, check the following and/or perform the service specified as needed.

- CHECK guards, grass bag and adaptor or side discharge chute to make sure these items are in proper position and securely tightened. NOTE: The tab on inside rear edge of the adaptor or side chute must push the interlock spring in toward the center of the mower. If improperly installed, the engine cannot be started.

- CLEAN surfaces to remove dust, dirt, clippings particularly from cooling air intake screen on engine to prevent overheating.

- CHECK oil level in 4-cycle engine and add oil as needed to bring the level up to, but not over, full mark.

- CHECK cutting height and adjust, as needed, to suit prevailing grass conditions before starting. (Refer to height adjusting procedure on page 5).

- FILL FUEL TANK after pushing mower outdoors where fumes will be safely dissipated.

1.3 STARTING-STOPPING ENGINE

Stop engine (& blade) by releasing the BLADE CONTROL or pulling the ENGINE CONTROL rearward to STOP position.

A. ROPE START: Since the engine cannot be started unless the BLADE CONTROL is held against the upper handle, use the following steps to rope start the engine. If the engine is cold, push primer button, if so equipped. Also, turn fuel valve on beforehand on engines so equipped.

1. Set ENGINE CONTROL in START or CHOKE position.
2. Place foot with toe pointing forward on top of rear tire.
3. Hold BLADE CONTROL firmly to handle.
4. Bend at waist to reach ROPE STARTER.
5. Pull rope as you straighten up to use your back more than arm muscles.

NOTE
ON **BBC MODELS**, THE ENGINE CAN BE STARTED WITHOUT HOLDING THE BLADE CONTROL AGAINST THE HANDLE.

Section I - OPERATING INSTRUCTIONS

6. Repeat pulling until engine starts, guide rope slowly back to engine (the rope may break if allowed to snap back), continue holding BLADE CONTROL and move behind handles to operator's position. See Figure 1.2.

B. ROPE START BBC MODELS: Use the following steps to rope start engine.

1. Set ENGINE CONTROL In START or CHOKE position.
2. Turn FUEL VALVE on, if so equipped.
3. Place foot with toe pointing forward on top of rear tire.
4. Bend at waist to reach ROPE STARTER.
5. Pull rope as you straighten up to use your back more than arm muscles.
6. Repeat pulling until engine starts, guide rope slowly back to engine (the rope may break if allowed to snap back). After engine starts, move behind handle and engage blade with the BLADE CONTROL.

C. ELECTRIC START: The keyswitch on electric start models has two positions which are RUN and START. The engine **cannot** be stopped at the keyswitch. Stopping is accomplished by either releasing the BLADE CONTROL or by moving the ENGINE CONTROL to STOP position. To start the engine electrically, proceed as follows: Turn fuel valve on beforehand on engines so equipped.

1. Move ENGINE CONTROL to START or CHOKE position.
2. Hold BLADE CONTROL firmly to handle. (not necessary on BBC models).
3. Insert key and turn KEYSWITCH to START position and hold until engine starts, then release.

NOTE:
ON THE **SNAPPER BBC MODELS** THE ENGINE IS STOPPED BY USE OF THE ENGINE CONTROL (#1) ONLY.

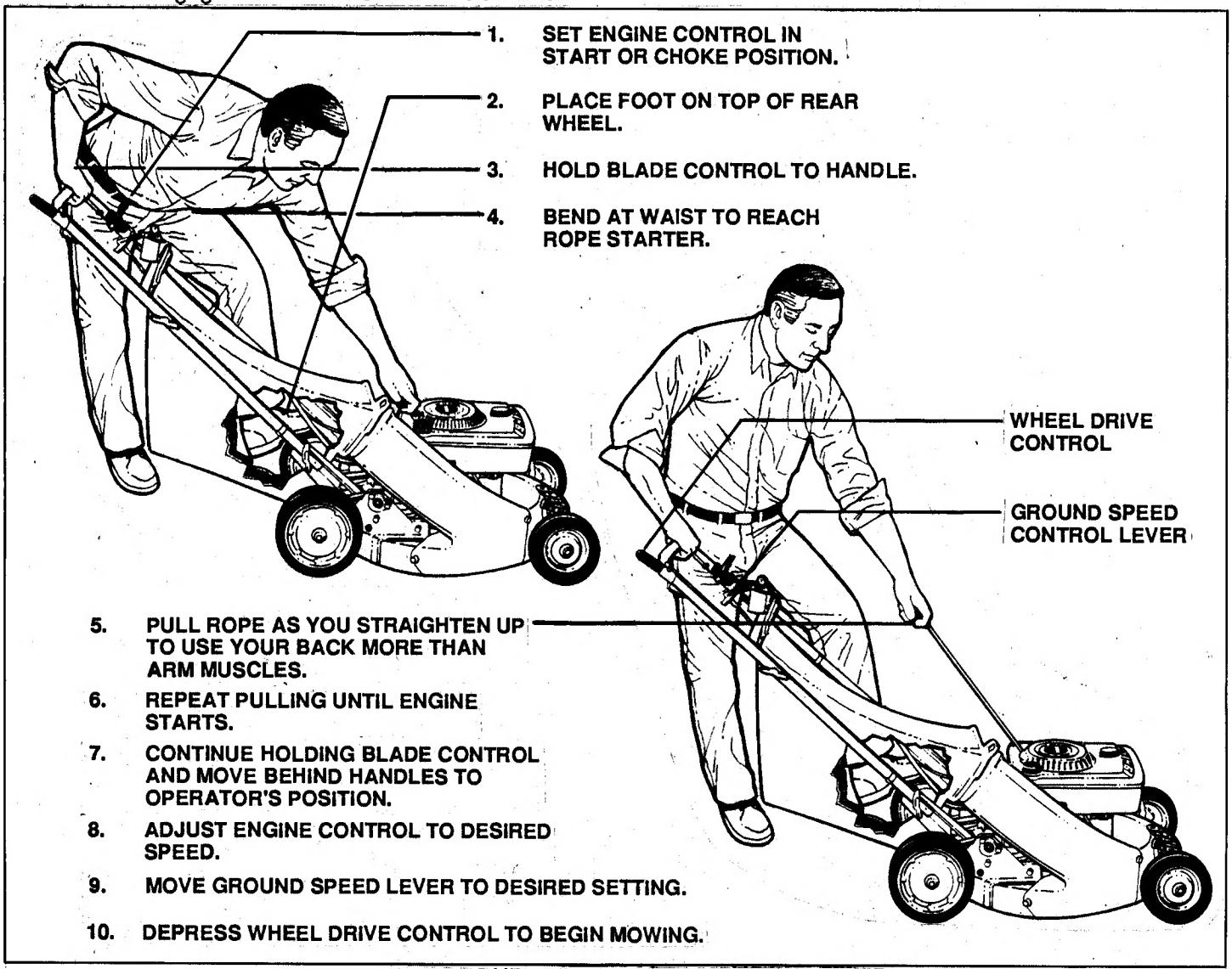


FIGURE 1.2 MANUAL START PROCEDURE

Section I - OPERATING INSTRUCTIONS

NOTE:
To avoid depleting battery energy and/or overheating the starting motor, do not crank the engine continuously for more than 5 seconds at a time. Allow brief period between cranking attempts. If the battery charge is too low for cranking the engine, use the rope starter. The electric start engines have alternators to maintain sufficient battery charge when the mower is used frequently.

D. **BATTERY CHARGING:** A plug-in battery charger which operates off 120V/60hz household current is sufficient for charging the battery. When recharging, disconnect battery from wiring harness, install charger in household outlet, connect charger to proper terminals on battery and turn charger on. If battery is weak, charge for 48 hours. Charge for 72 hours if battery is completely discharged.

1.4 CUTTING HEIGHT ADJUSTMENT

Always stop the engine and wait until the mower blade comes to a complete halt before readjusting the cutting height! To readjust, move the height adjusting latch on each wheel outward and slide each, one notch at a time, to the position desired. Positioning the latches in the highest notch sets the mower at the lowest cutting height while the lowest notches sets it in the highest cutting position. Refer to Figure 1.3 for the approximate cutting height afforded by each of the five latch positions. For best results, set both latches on one side first, then go to the other side and set these latches into corresponding notches. Before resetting the rear latches into lower notches, lift the weight of mower off the rear wheels first by pulling up on the handle, then reset.

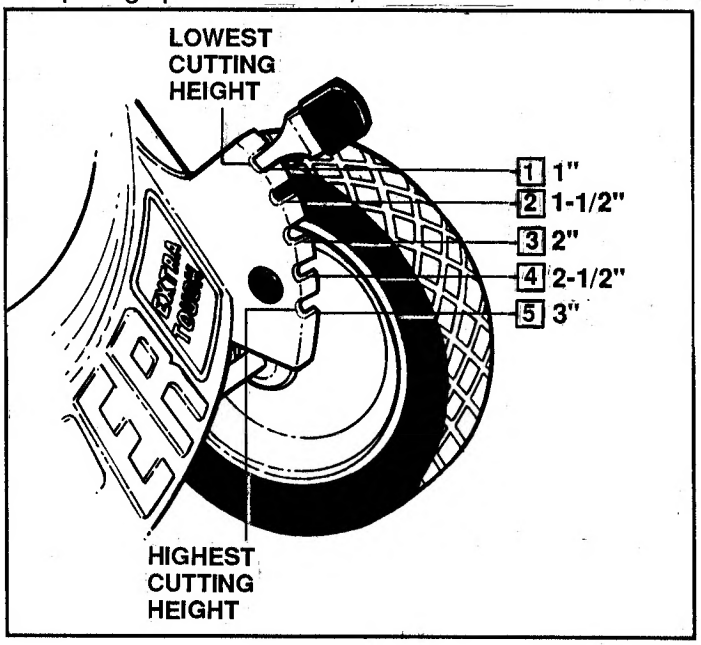


FIGURE 1.3

1.5 MOWING PROCEDURE

Vary speed to suit grass conditions. Set the engine speed high for tall, thick grass or lower for sparse grass. Push hand-propelled models at a speed that is comfortable, but will allow even cutting without stalling. On self-propelled models, set ground SPEED CONTROL lever in desired forward speed setting, then grip the WHEEL DRIVE control and hold against handle to engage clutch for forward motion. Releasing the WHEEL DRIVE control stops forward motion. The mower can be hand pushed forward on in reverse for trimming with the WHEEL DRIVE control released. The ground speed can be changed to a new setting at any time when in motion. Use low speed setting and clutch for down-hill braking.

A. **MOWING/VACUUMING HINTS:** The cutting deck should be level under all conditions. As a general rule, never cut more than 1/3 off the height of the grass. If, for example, the grass has grown 4 inches tall, set the mower height latches in the lowest position which establishes the cutting height at approximately 3". (Refer to Figure 1.3), thereby cutting about 1" off the grass and staying well within the 1/3 off limit. If you want the grass shorter, wait a few days, then recut to the lower height. If cut too short, the grass will expend more energy for development of new leaf structures and less for a healthy root system and will be more subject to burning. On the other hand, if allowed to grow too long, the lower portion will be shaded and, as a result, will discolor. In dry periods, allow the grass to grow longer than you normally would.

NOTE:
DO NOT MOW ACROSS AN AREA WHERE DRY TYPE FERTILIZER HAS JUST BEEN SPREAD AS MOST OF THE FERTILIZER WILL BE VACUUMED UP.

Change your mowing pattern from time to time for a smoother cut lawn. Finely chopped clippings add nutrients to the soil to promote grass growth. However, if the clippings become too heavy, they mat to form thatch which prevents proper breathing and holds moisture. If thatch is particularly heavy, the Thatcherizer accessory, described on the back page, will do an effective job of dislodging the decaying matter. To prevent grass disease from thatch, vacuuming and bagging is recommended for most cuttings along with an occasional broadcasting of the clippings into the lawn for nutritive value. Your **SNAPPER** can be quickly converted back and forth from bagging to side discharge with the accessories.

Section II - MAINTENANCE & ADJUSTMENTS

2.1 This section covers service, adjustment and replacement procedures for components not requiring major overhaul. Overhaul of the transmission or differential is considered a major project and is, therefore covered in a separate section.

A. Most of the information in this section pertains to self-propelled models.

B. Always remember to disconnect and secure the spark plug lead away from the spark plug before doing any work on mower.

C. If tilting mower to work on underside, tilt with spark plug UP whenever possible to prevent oil from running into the cylinder head and causing start-up problems.

D. Always empty fuel tank outdoors before working on mower to prevent possible fire hazard from spilled fuel.

2.2 LUBRICATION

A. Engine

1. Change oil every 25 hours as specified in engine manual. See Figure 2.1.

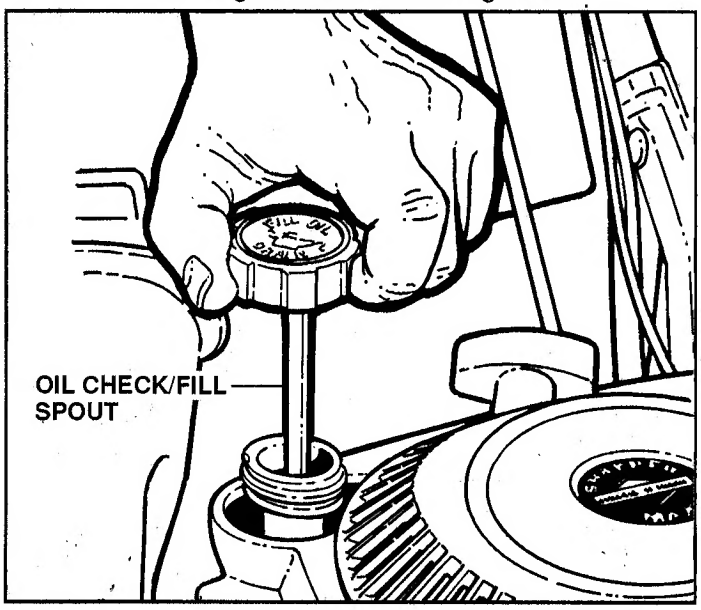


FIGURE 2.1

B. Transmission (Self-Propelled)

1. Remove plug and check every 25 hours of operation. See Figure 2.2.
2. If grease is not visible on input gear, add small amount of **SNAPPER 00** Grease, not to exceed 2 oz.

CAUTION
AVOID OVER-LUBRICATING TRANSMISSION.

3. Replace plug.

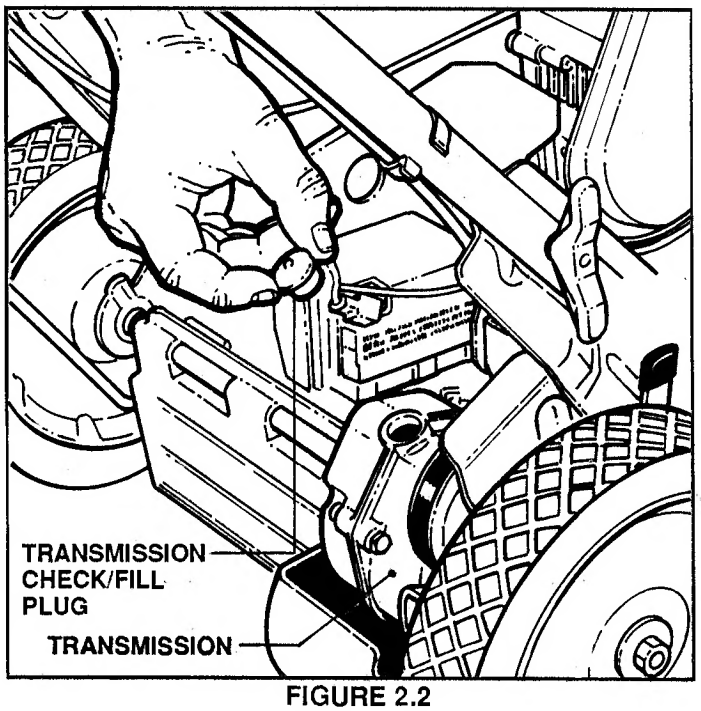


FIGURE 2.2

C. Moving Parts

1. Occasionally lightly oil movable surfaces of components such as height adjusting levers, wheel axles, shift levers and such.
2. Avoid spilling oil on drive disc surface of self-propelled models.

2.3 STORAGE PROCEDURE

A. Disconnect spark plug wire from plug.

B. Turn mower on side and thoroughly clean underside of deck.

C. Scrape accumulations of grass with putty knife and/or wire brush.

D. Wash underside with hose.

E. Clean external surfaces with light coating of oil to prevent corrosion.

F. Insure grass bag is completely emptied to prevent decay and formation of mold inside the bag while in storage. (The grass bag may be washed in detergent; however, allow to dry thoroughly after washing).

G. Prepare engine for storage as directed in engine manual.

H. Store mower in a dry area protected from weather.

Section II - MAINTENANCE & ADJUSTMENTS

2.4 CUTTER BLADE

> **NOTE**
> ***Dull cutting edges cause grass tips to fray and grass to turn brown. If edges of blade are nicked or blade is bent, replace blade.***

A. To Remove Blade

1. Disconnect spark plug lead.
2. Block blade with piece of wood to prevent turning.
3. Remove retaining capscrews, washers, and separate blade from hub. See Figure 2.3.

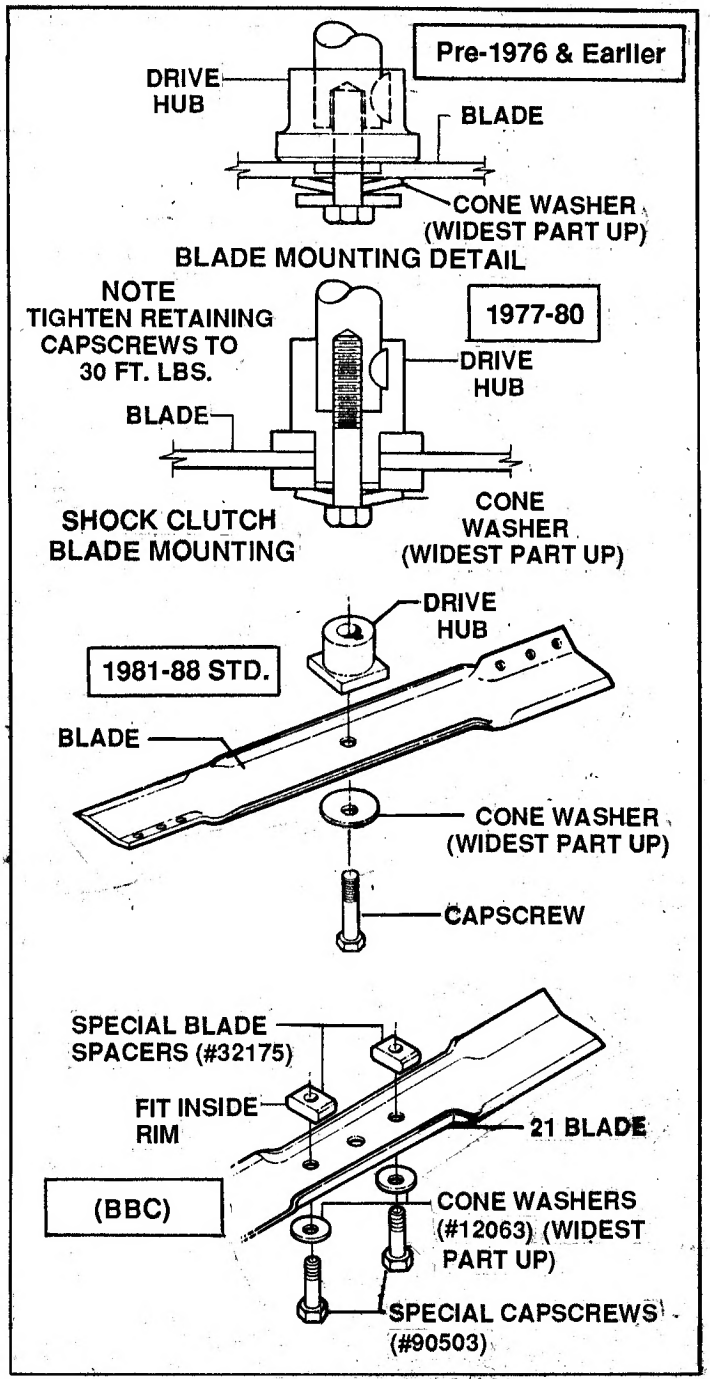
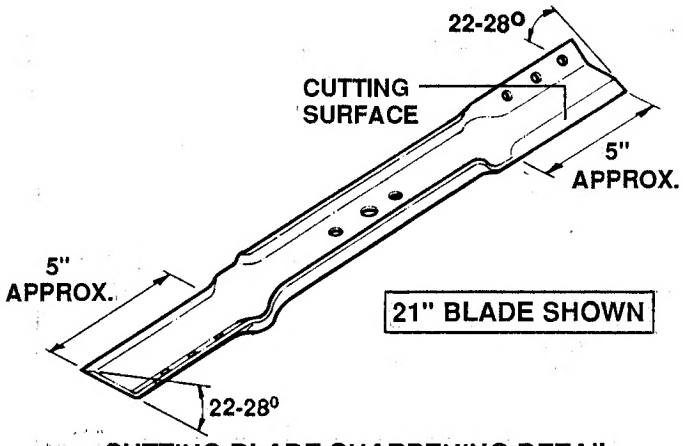


FIGURE 2.3

B. To Sharpen Blade

1. Sharpen only tips of blade with a grinding wheel.
2. Sharpen on an angle of 22 to 28 degrees. The cutting surface extends approximately 5" in from the tips of the blade. See Figure 2.4.



CUTTING BLADE SHARPENING DETAIL

FIGURE 2.4

C. To Reinstall Blade

1. Position blade next to drive hub, insuring that hub corners are NOT on turned up portion of blade.
2. Place cone washer with widest part next to blade.
3. Install flat washer (If Applicable).
4. Install retaining capscrew and tighten 20 to 30 ft. lbs. with a torque wrench. (Use correct grade 5 capscrew.

> **NOTE**
> It is recommended that mowers equipped with earlier design shock clutch blade mounting arrangement, should be upgraded to latest design by using a BLADE HUB DRIVE KIT for engines with a 7/8", 1" or 25 mm diameter crankshaft. See your **SNAPPER** dealer for information concerning these kits.

2.5 AIR LIFTER KITS (9 HOLE BLADE ONLY)

The **SNAPPER AIR LIFT KIT**, though primarily used to increase vacuuming performance for bagging purposes, can also be used to increase air-flow for adverse conditions such as wet grass, wet leaves, etc. See Figure 2.5.

Section II - MAINTENANCE & ADJUSTMENTS

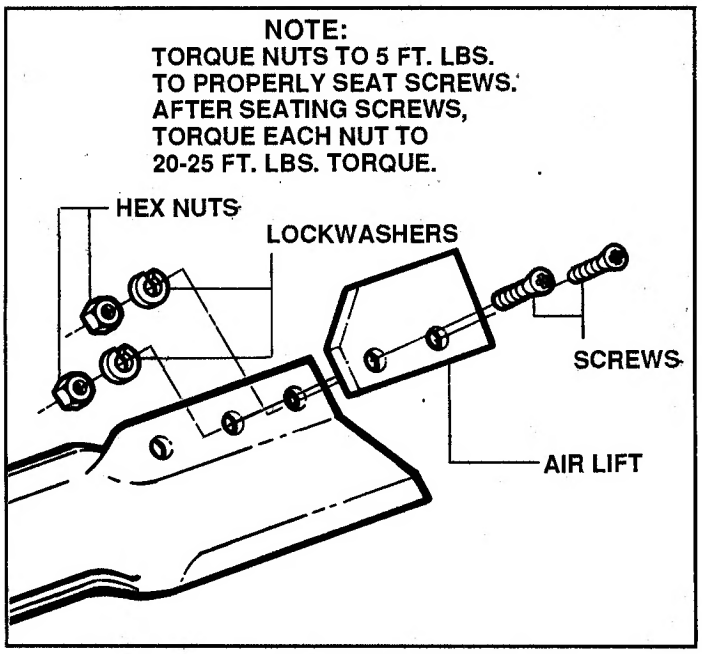


FIGURE 2.5

CAUTION
AIRLIFTS MUST BE REMOVED BEFORE INSTALLING **SNAPPERIZER!**

2.6 BLADE BRAKE CLUTCH (BBC)

The **SNAPPER BLADE BRAKE CLUTCH (BBC)** control and cable assembly is non-adjustable. Therefore, no adjustments to this unit is required over the life of the mower.

A. SYMPTOMS WARRANTING REPLACEMENT OF BBC UNIT

1. Blade does not stop within 3 seconds after BLADE CONTROL is released.
2. Blade does not engage or disengage properly.

NOTE
Improper engagement or disengagement of the blade may result from one of the following problems which can be corrected:

1. Grease or oil from engine has affected braking capabilities. Clean brake shoes.
2. Debris in BBC assembly is affecting performance. Clean.
3. BBC assembly has gotten wet. Allow to dry then retest braking time limit.

(See Section IV - OVERHAUL & REPAIR, 4.6 for **BBC** replacement).

2.7 DECK SERVICE

A. To Prolong LIfe and Efficiency of Mower

1. Maintain underside of deck clean and free of accumulated grass clippings.
2. Wash underside of deck with hose and/or scrape with wire brush and scraper.
3. Insure that this is done at end of cutting season before placing mower in storage.

2.8 BELT REPLACEMENT, SELF-PROPELLED MODELS

A. Types of Belts

1. Engine Belt: The engine belt transmits power from the engine pulley to the drive disc.
2. The Poly (Multi-Groove) V-Belt: This belt engages the clutch to transmit power to the transmission and drive wheels.

NOTE
WORN ENGINE OR POLY V-BELTS WILL CAUSE MOWER TO PULL IMPROPERLY.

B. Engine Belt Replacement Procedure

1. Disconnect spark plug wire and secure it away from plug.
2. Tilt mower and remove the cutting blade and hub.
3. Remove faulty belt.

CAUTION
DO **NOT** CUT WARRANTY BELTS AS THESE MAY HAVE TO BE RETURNED FOR TESTS.

4. Unhook wheel drive spring from driven disc assembly.
5. Lift driven disc assembly sufficiently free of drive disc to allow clearance for new belt.
6. Insert belt below drive disc pulley, but do not place it in pulley groove.
7. Insert belt through the deck opening and place belt in groove of engine pulley.
8. Guide other end of belt around drive disc pulley. (Belt can be worked into grooves by pulling recoil starter if necessary).
9. Reinstall cutting blade components. (Insure that retaining capscrew is tightened to 30 ft. lbs. torque).
10. Reinstall wheel drive spring.
11. Reconnect spark plug wire.

Section II - MAINTENANCE & ADJUSTMENTS

C. Alignment of Engine Belt:

1. Position bottom edge of engine pulley 1 1/2" from end of crankshaft. See Figure 2.6.

> **NOTE**
> IF MOWER IS EQUIPPED WITH THE BLADE BRAKE CONTROL (BBC), THE ENGINE PULLEY WILL BE MOUNTED "GROOVE DOWN" ON THE ENGINE CRANKSHAFT. THE BOTTOM EDGE OF THE PULLEY IS POSITIONED **1-1/2"** FROM END OF CRANKSHAFT.

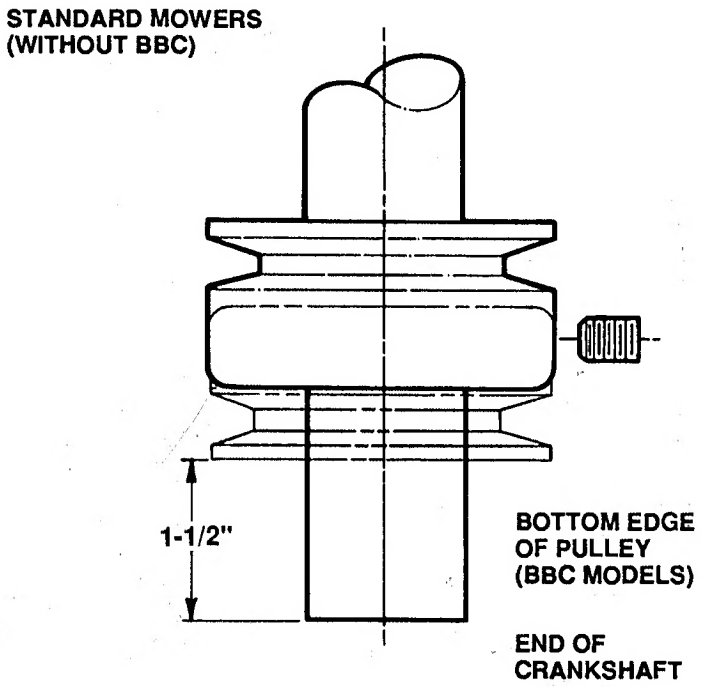


FIGURE 2.6

2. Loosen setscrew in pulley hub and shift pulley up or down on crankshaft until properly positioned.
3. Retighten setscrew.
4. The belt is now properly aligned in the grooves on the drive disc and engine pulleys.

D. Poly V-Belt Replacement Procedure

1. Remove clip from the transfer rod. See Figure 2.7.
2. Disconnect the transfer rod from the speed control lever. Refer to Figure 2.7.
3. Disconnect drive spring from driven disc assembly. See Figure 2.9.

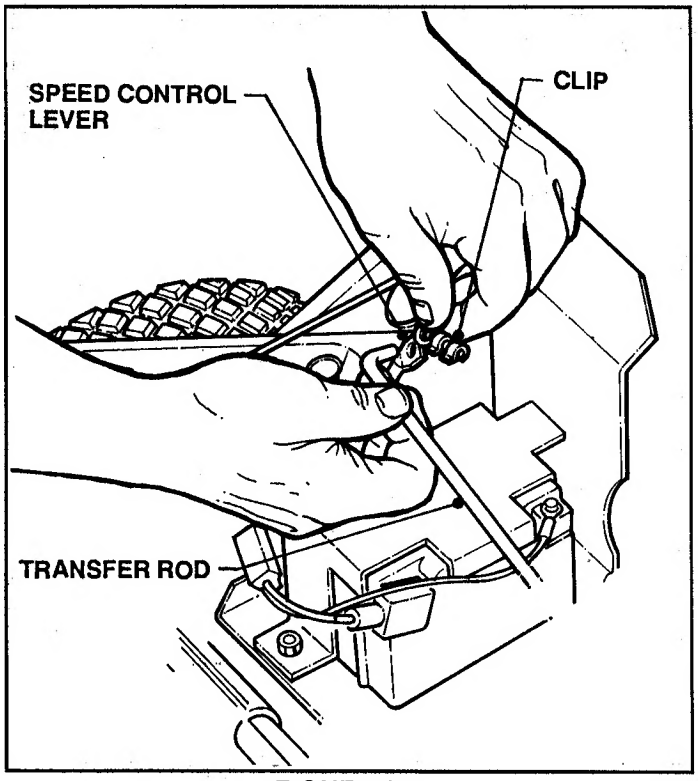


FIGURE 2.7

4. Pull the driven disc assembly off the hex shaft.
5. Note position of old belt, then remove belt.
6. Slip replacement belt over hex shaft and position around hex shaft pulley.
7. Twist belt sideways and pull it upward between the differential bracket and poly V-input pulley on transmission. See Figure 2.8.

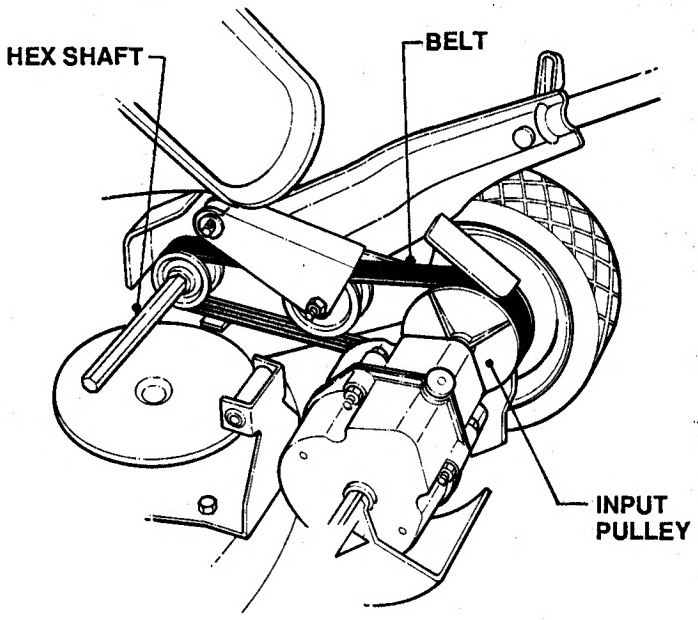


FIGURE 2.8

8. Insure that new belt is above hex shaft pulley belt guide. (If belt is installed below the guide, the guide will rub against belt and damage it).
9. Reinstall driven disc assembly and wheel drive spring.
10. Reconnect transfer rod to speed control lever. Refer to Figure 2.7.

2.9 DRIVE SYSTEM SERVICE

A. Driven Disc (Rubber Tire) Replacement Procedure

NOTE
DRIVEN DISC SHOULD BE REPLACED WHEN WORN DOWN TO WITHIN 1/16" OF THE METAL PLATE, WORN UNEVENLY OR IF THE RUBBER HAS BEEN PEELED.

1. Remove clip and disconnect transfer rod from the speed control lever.
2. Unhook drive spring and remove the driven disc assembly. See Figures 2.9 and 2.10.

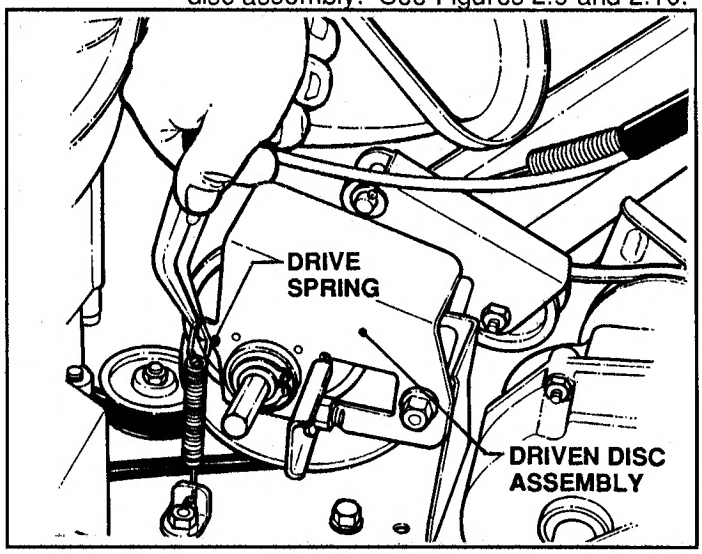


FIGURE 2.9

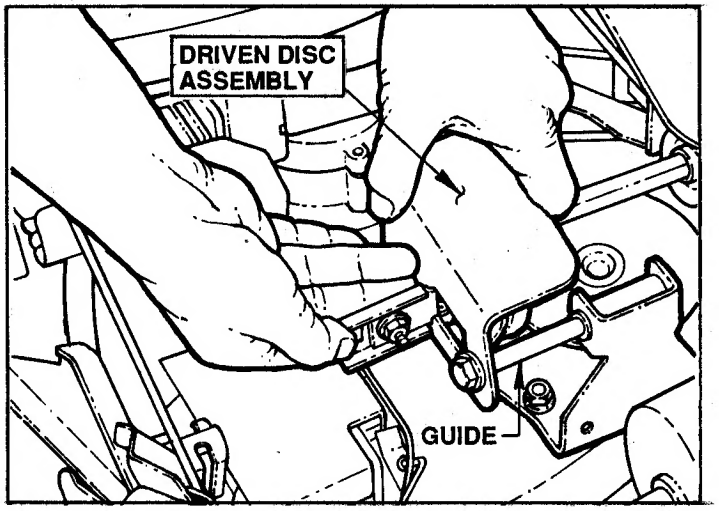


FIGURE 2.10

3. Remove the five machine screws from the driven disc plate. See Figure 2.11.
4. Separate the plate from the disc hub.
5. Remove existing disc and install replacement disc.
6. Reinstall plate and secure with the five machine screws.
7. Tighten screws from 2 to 3 Ft. lbs.
8. Reinstall the driven disc assembly on hex shaft.
9. Reconnect spring and the transfer rod to the speed control lever.

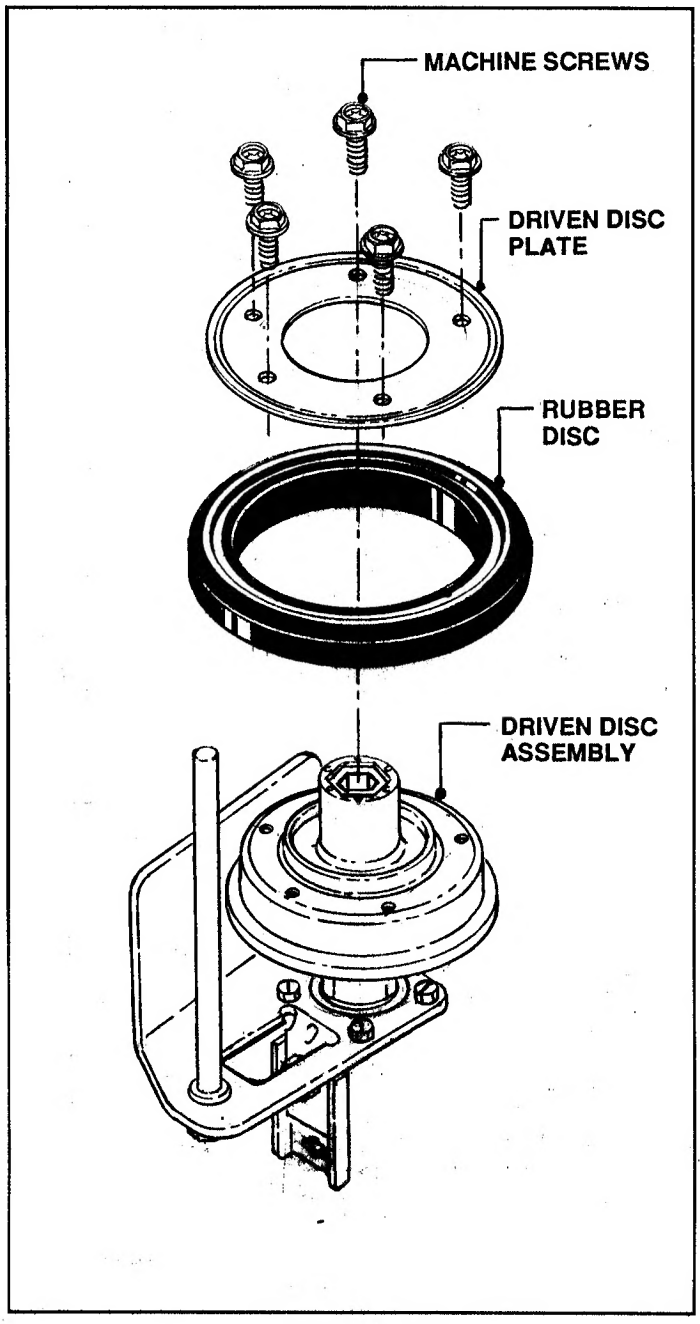


FIGURE 2.11

Section II - MAINTENANCE & ADJUSTMENTS

B. Driven Disc Assembly

1. Characteristics:
   (a) The driven disc consists of five replaceable parts: Retaining ring plate; Driven rubber ring; Hub assembly with bushing; bearing and retaining ring.
   (b) The hex bushing is press-fitted into the hub.
   (c) The ball bearing is fitted to the thrust plate with four screws.

CAUTION
MAKE CERTAIN THE SPARK PLUG WIRE IS REMOVED AND PLACED AWAY FROM SPARK PLUG TO PREVENT PREMATURE ENGINE STARTING.

NOTE
REPLACE COMPLETE HUB ASSEMBLY WHEN BUSHING BECOMES WORN OR OTHERWISE DAMAGED.

C. Driven Disc Checking and Adjustment Procedures

The driven disc should be properly adjusted for optimum operation, minimum rubber ring wear, smooth shifting, and to prevent the mower from jumping out of gear due to misadjustment. If the clutch is properly adjusted, and both belts are in good condition (or are new), conduct the two tests and then adjust as needed.

1. Check the **"DISTANCE"** from the *CENTER* of the driven disc's rubber ring to the left *EDGE* of the drive disc.
   (a) Shift the GROUND SPEED CONTROL into the highest setting.
   (b) **STOP** engine.
   (c) The *CENTER* of the rubber ring should be 1/8" to 1/4" from the left *EDGE* of drive disc as shown. See Figure 2.12.
   (d) To re-adjust, loosen the connector hex nut - connector is slotted for driven disc assembly movement. See Figure 2.13.
   (e) Slide the driven disc LEFT or RIGHT *(on hex shaft)* as required.
   (f) Re-tighten connector hex nut.
   (g) Test mower after adjusting.

2. Check the **"TRACKING POINT".** The rubber ring should contact the drive disc's surface at a point 1/8" *in front of* an imaginary reference centerline crossing through the center of the drive disc. You may wish to draw the centerline with a pencil. See Figure 2.12.

When properly adjusted, the rubber ring will "Track" (run) **In place** approximately half way between the center of the drive disc and it's left *EDGE*, with the transfer rod disconnected and the engine running. Perform this test before proceeding with the adjustment.

(a) Re-adjust "Tracking".
(b) Imagine (or drawing) reference line ***across*** drive disc center.
(c) Loosen hex nut (W) securing thrust plate guide (X) to thrust plate (Y) at slot (Z).
(d) Move driven disc (with thrust plate Y) FORWARD or REARWARD until the rubber ring contacts the drive disc surface 1/8" *in front of* the imaginary reference centerline.
(e) Re-tignten hex nut (W).
(f) Perform the test again before reattaching the transfer rod.

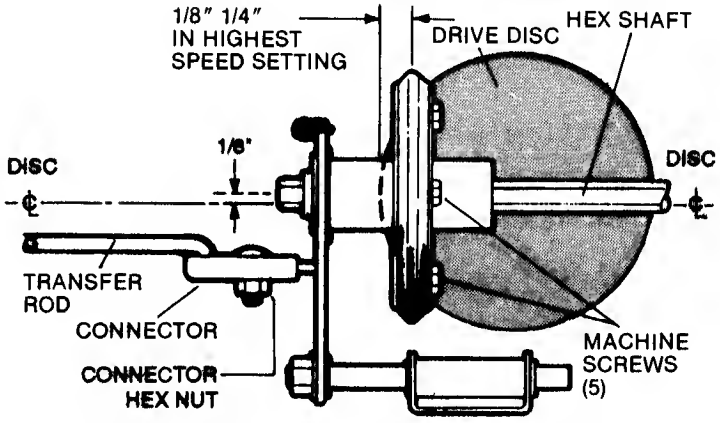


FIGURE 2.12

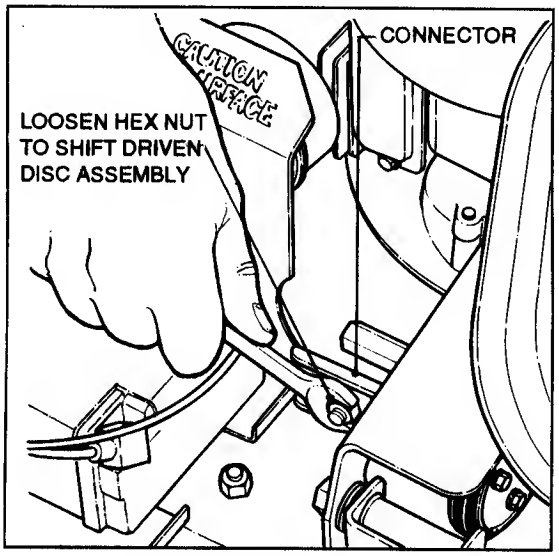


FIGURE 2.13

Section II - MAINTENANCE & ADJUSTMENTS

D. Clutch Adjustment Procedure

NOTE
THE CLUTCH CABLE SPRING IS ACTUALLY TWO SPRINGS - AN INNER AND AN OUTER SPRING. WHEN PROPERLY TENSIONED, THERE SHOULD BE 1/16" TO 1/8" CLEARANCE BETWEEN THE SPRING HOOK AND INSIDE THE EYE OF THE PULL CABLE WITH CLUTCH HANDLE RELEASED. SEE FIGURE 2.14.

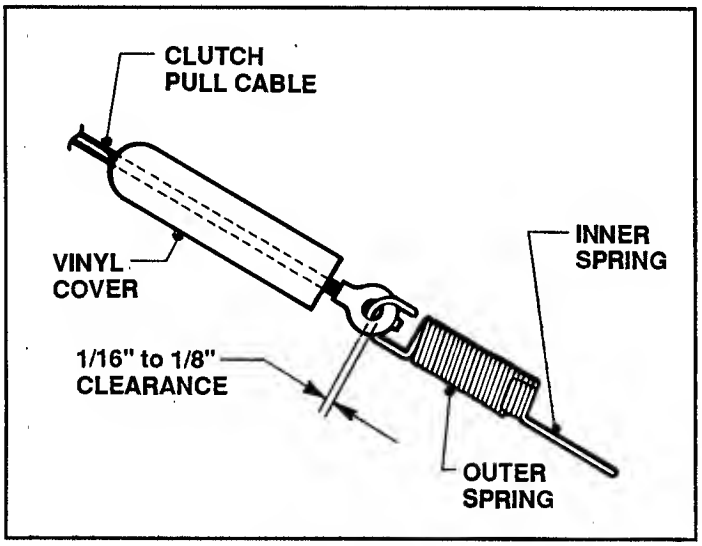


FIGURE 2.14

1. Adjustment of the clutch rod tension is made at the clutch rod spring, located under the vinyl cover on the clutch pull rod. See Figure 2.15.

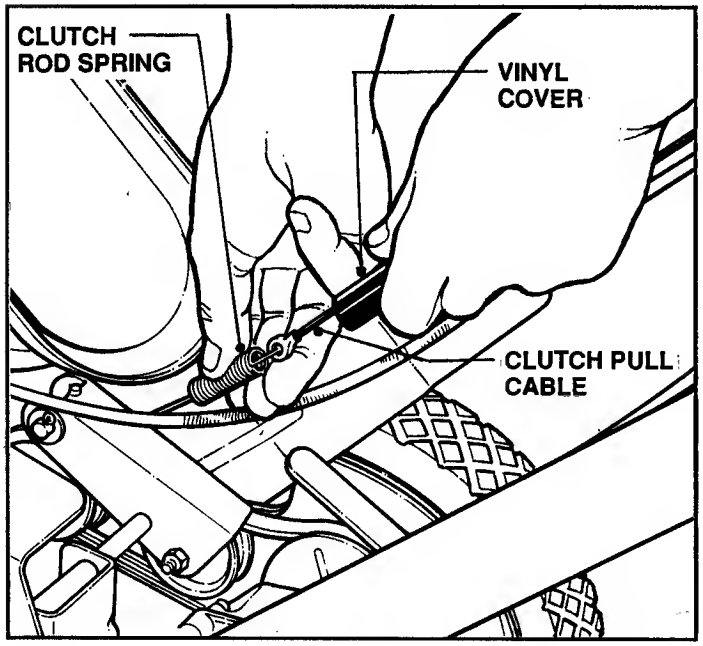


FIGURE 2.15

2. To adjust clutch rod tension:
   - **(a)** Slide cover upward on rod.
   - **(b)** Unhook spring from pull rod.
   - **(c)** Turn outer spring in a CLOCKWISE direction to reduce clearance.
   - **(d)** Turn outer spring COUNTERCLOCKWISE to increase clearance.
   - **(e)** Reconnect spring to rod and repeat adjustment as required until clearance is correct.
   - **(f)** Position vinyl cover over the spring to keep spring clean and prevent it from rubbing against cloth of grass bag.

NOTE
IF THE BELT STRETCHES, DO **NOT** ADJUST SPRING. REPLACE BELT.

CAUTION
TO PREVENT PUSH NUT FROM SNAPPING OFF END OF CLUTCH PULL ROD AT CLUTCH HANDLE, POSITION ROD RETAINING CLIP APPROXIMATELY 5" BELOW THE HANDLE. SEE FIGURE 2.16.

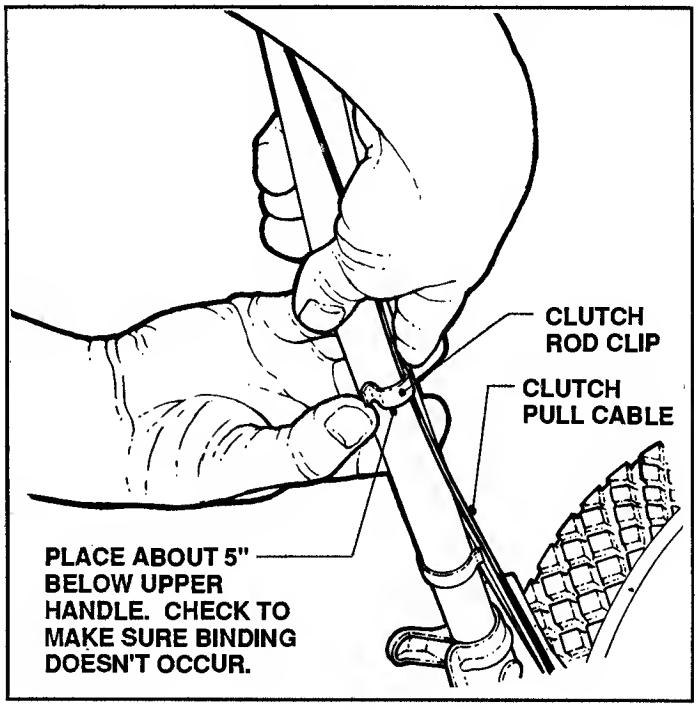


FIGURE 2.16

Section II - MAINTENANCE & ADJUSTMENTS

E. Hex Shaft and Bearing

1. Replacement of Hex Shaft:
   - (a) Disconnect transfer rod at the clip.
   - (b) Separate transfer rod from speed control lever.
   - (c) Unhook wheel drive spring.
   - (d) Remove driven disc assembly by sliding assembly to the **LEFT** until clear of the hex shaft.
   - (e) Hold hex shaft with a wrench and remove retaining nut on outside of right rear wheel bracket.
   - (f) Pull hex shaft out toward the inside.
   - (g) Replace hex shaft by reversing disassembly procedure.
2. Replacement of Ball Bearing:
   - (a) Hold hex shaft with wrench and remove retaining nut on outside of rear wheel bracket.
   - (b) Remove the two self-tapping screws from holder half. See Figure 2.17.

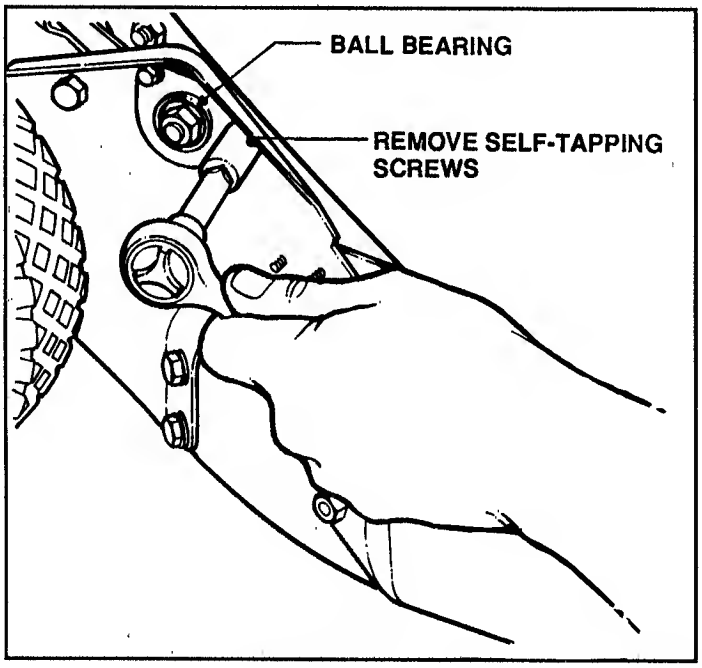


FIGURE 2.17

   - (c) Remove "O" - Ring.
   - (d) Remove ball bearing.
   - (e) Replace bearing, insuring that O-Ring is over outside of bearing. See Figure 2.18.

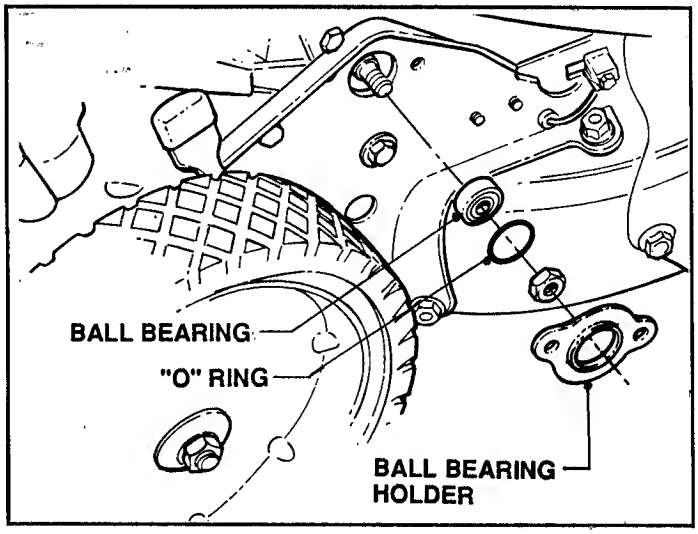


FIGURE 2.18

   - (f) Replace the holder half and two self-tapping screws.

F. Poly V-Pulley Replacement Procedure

> **NOTE**
> THE POLY V-PULLEY CAN BE REPLACED WITHOUT REMOVING THE DIFFERENTIAL FROM THE MOWER.

1. Remove capscrew securing differential link to the bracket on differential.
2. Slide link up out of the way.
3. Remove two lock nuts holding bracket to the differential housing.
4. Pull bracket off toward the **RIGHT.**
5. Wedge a wrench against the fins on inside of pulley to prevent it from turning.
6. Remove pulley retaining nut. See Figure 2.19.

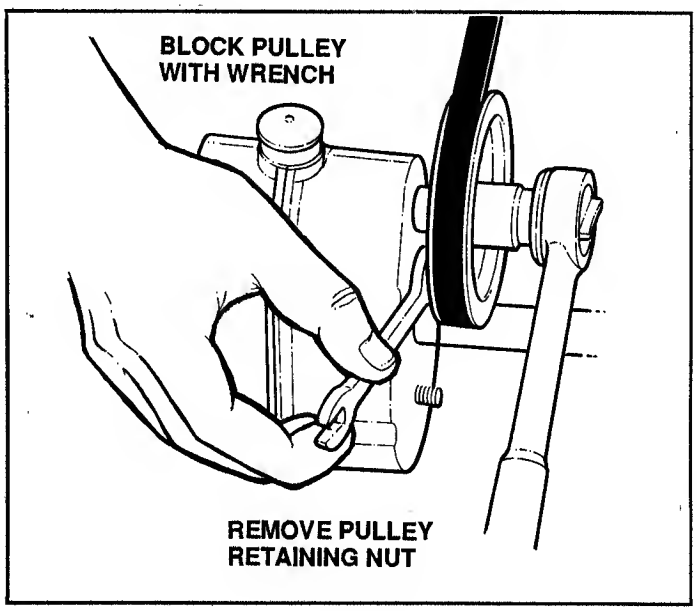


FIGURE 2.19

7. Remove the belt from the poly v-pulley, then slide pulley off toward the **RIGHT.**
8. Reverse procedure to install replacement pulley.

G. Clutch Idler Assembly Removal Procedure

> **NOTE**
> THE CLUTCH IDLER ASSEMBLY MAY BE REMOVED WITHOUT REMOVING ANY COMPONENTS OF THE MACHINE. .

1. Slide the poly v-belt off the idler pulley.
2. Remove the cotter pin.
3. Using a pair of needle nose pliers, unhook the torsion spring from the idler. See Figure 2.20.

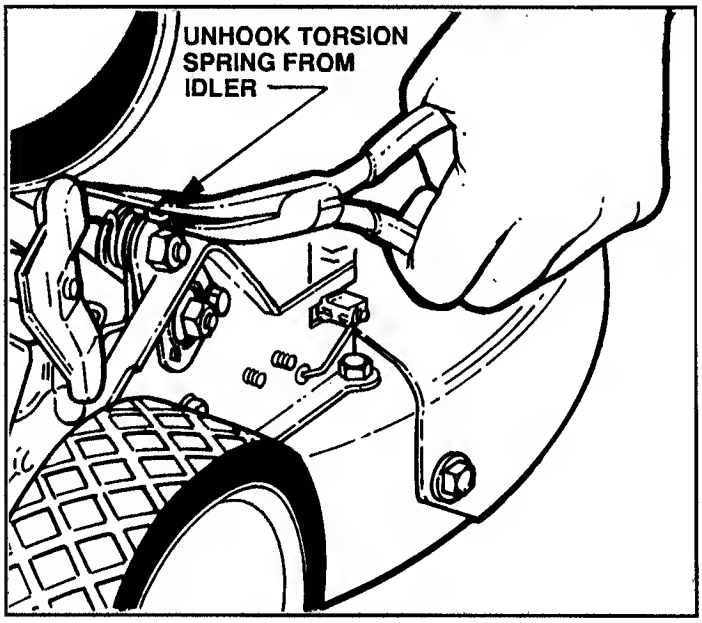


FIGURE 2.20

4. Slide idler off the stud toward inside of mower.
5. Recondition idler assembly with replacement parts or replace as a unit.
6. Reverse procedure to reinstall assembly.

H. DECK IDLER ASSEMBLY REMOVAL PROCEDURE

1. Unhook idler tension spring.
2. Remove Drive Disc Assembly by removing nut and internal tooth lockwasher from Drive Disc shaft under mower deck.
3. Lift up Drive Disc to separate from mower deck.
4. Remove Idler Arm Assembly from Drive Disc Shaft and bushing. See Figure 2.21.

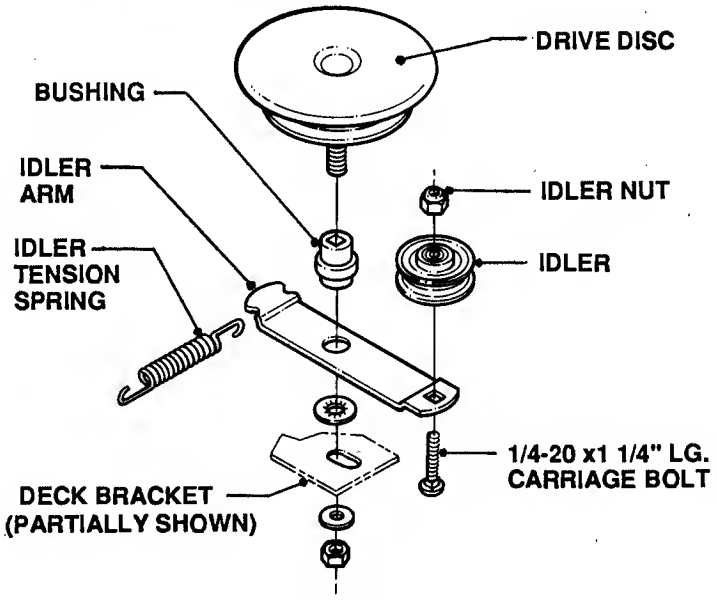


FIGURE 2.21

5. Remove idler pulley from idler arm. Refer to Figure 2.21.
6. Rebuild idler assembly using individual parts or replace as unit.
7. Reinstall components in reverse order of disassembly.

I. DECK IDLER ASSEMBLY REMOVAL PROCEDURE FOR CAST DECKS AND EARLY MODEL STEEL DECKS

1. Unhook idler springs by removing retaining ring.
2. Using snap ring pliers, remove retaining ring on end of idler stud.
3. Unhook idler spring from deck. See Figure 2.22.

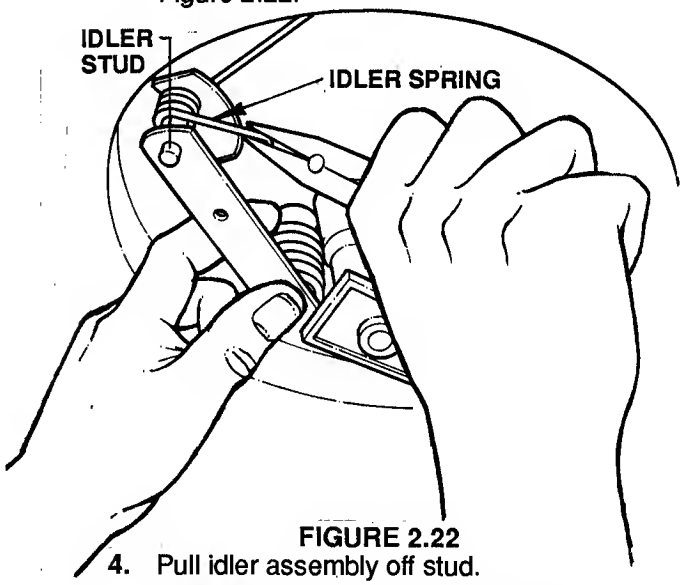


FIGURE 2.22

4. Pull idler assembly off stud.
5. Rebuild assembly using individual parts or replace with complete assembly.
6. Reinstall components in reverse order of disassembly.

Section II - MAINTENANCE & ADJUSTMENTS

2.10 WHEEL ASSEMBLIES

A. Removal Procedure (All Wheels)

1. Remove hex nut. See Figure 2.23.
2. Remove washer.
3. Remove wheel.
4. If required, replace bushing (where applicable).
5. Reinstall wheel components in reverse order.

NOTE

ON COMMERCIAL MOWERS, (PUSH AND SELF-PROPELLED) BUSHINGS ARE MADE INTO METAL RIM.
HAND-PROPELLED MOWERS HAVE NON-METAL RIMS WITH REPLACEABLE BUSHINGS.

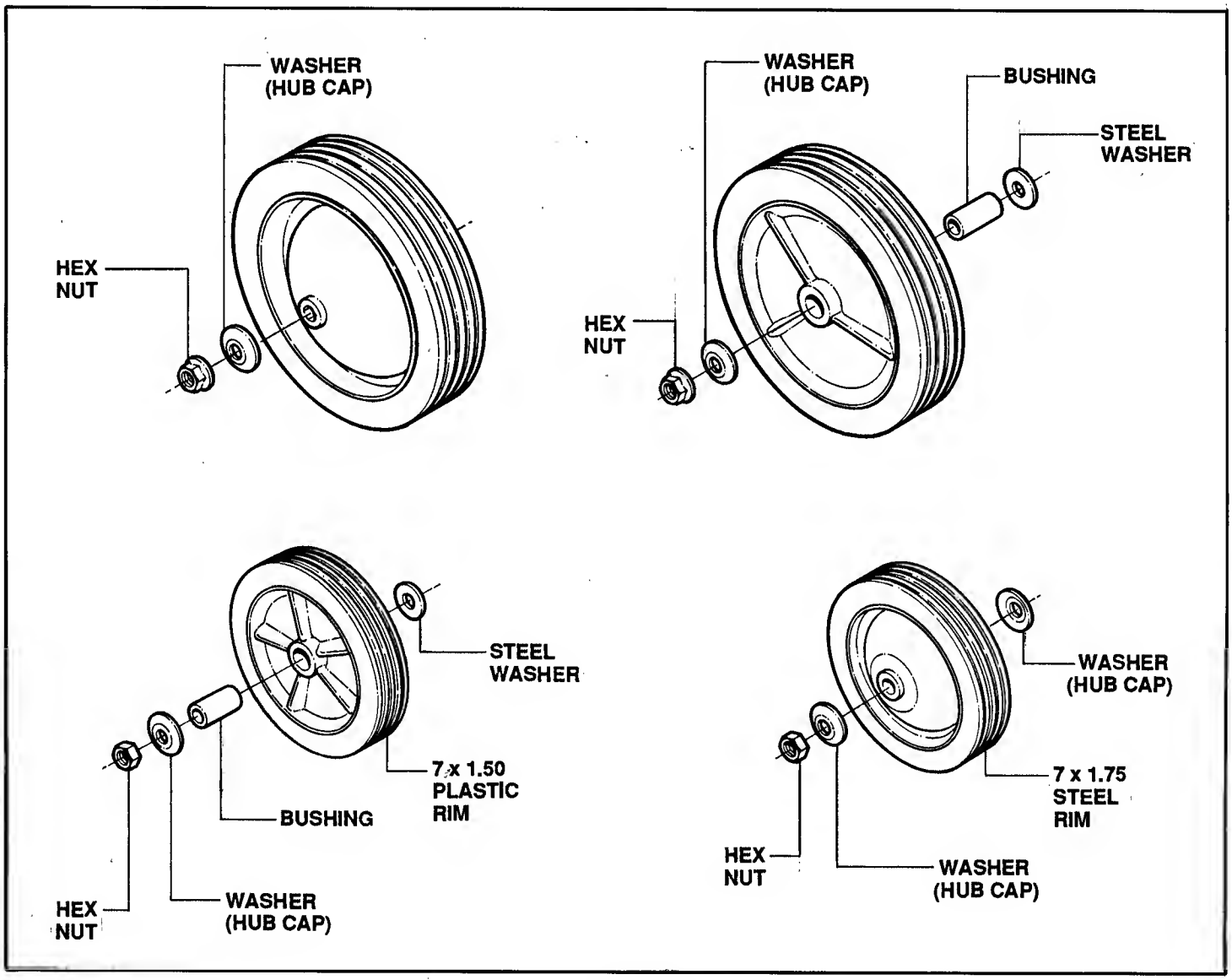


FIGURE 2.23

Section III - TROUBLESHOOTING

When problems occur, always look for the simplest causes first, even though they may seem too obvious to consider. For example, don't go ahead with overhaul of the transmission assembly without first eliminating other possible and easier to remedy causes for the drive problem. The guide below and on the following page has been developed with the simplest cause listed first.

PROBLEM	POSSIBLE CAUSE(S) AND PROBABLE REMEDY
WILL NOT START	**1. IMPROPER CHOKING** **a.** Throttle control left in stop or run position. Move knob to choke or start. **b.** Throttle cable setting incorrect. Reset to correspond to knob positions.
	2. NOT GETTING FUEL **a.** Fuel tank empty. Replenish fuel supply. **b.** Fuel line clogged. Clean out. **c.** Carburetor faulty or gummed up. Carburetor reconditioning required.
	3. NO IGNITION SPARK **a.** Ignition lead loose or off spark plug. Reconnect lead. **b.** Interlock preventing start-up due to incorrectly installed grass bag adaptor or side chute. Reinstall. **c.** Spark plug electrodes fouled by deposits, oil or fuel. Remove plug and service or replace.
	4. OTHER CAUSES **a.** Not cranking due to dead battery on electric start models. Recharge or replace. **b.** Interlock faulty. Test and replace assembly as required.
STARTS HARD	**1. FUEL RELATED CAUSES** **a.** Throttle control in wrong position causing too much choking when engine hot or too little when cold. Reposition knob. **b.** Water or other impurities in fuel. Dump fuel and replenish with clean, fresh supply. **c.** Air cleaner clogged causing rich mixture. Service element.
	2. OTHER CAUSES **a.** Dense grass restricting free rotation of blade as engine cranked. Move mower to clear area. **b.** Weak ignition spark. Check for and correct loose connections, poor contacts and faulty plug. **c.** Carburetor malfunctioning. Reset to specifications or have reconditioned. **d.** Battery weak causing too low cranking speed. Recharge battery.
STOPS SUDDENLY	**1. FUEL RELATED CAUSES** **a.** Fuel run dry. Refill tank after proper cooling off period. **b.** Carburetor main fuel needle vibrated closed. Reset to specifications.
	2. OTHER CAUSES **a.** Blade jammed by solid object or accumulation of grass. Disconnect spark plug lead and unclog. **b.** Ignition lead wire disconnected or grounded by branch, shrub, etc. Reconnect. **c.** Interlock stops operation due to loose bag adaptor or side chute. Reposition and retighten. **d.** Engine stops due to overheating or internal malfunction. Locate and correct cause.

Section III - TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE(S) AND PROBABLE REMEDY
VIBRATES EXCESSIVELY	1. **CUTTING BLADE RELATED** a. Blade loose. Retighten retaining capscrew. b. Blade improperly installed on hub. Make sure rim fits over hub flange. c. Blade out of balance due to impact damage. Replace blade.
	2. **ENGINE RELATED** a. Engine mounting bolts loose or missing. Install replacements and/or retighten loose bolts. b. Engine crankshaft bent. See engine dealer for straightening or replacement.
MOWING/BAGGING PROBLEMS	1. **CUTS POORLY** a. Wheels set lower on one side. Reposition to height setting. b. Blade cutting edges worn dull. Sharpen or replace. c. Ground speed too fast and/or engine speed too low for conditions. Reset speed.
	2. **BAGS IMPROPERLY** a. Grass bag too full or pores clogged. Thoroughly empty and clean bag. b. Cutting height set too low for conditions. Raise height. c. Engine speed set too low for bagging. Increase engine speed and/or decrease ground speed.
POWER PUSHES HARD	1. **COMMON CAUSES** a. Excessive weight due to full grass bag. Empty bag. b. Cutting height set too low in dense grass. Raise height. c. Wheel bearings sticking. Lubricate and/or replace bearings.
SLIPS INTO OTHER SPEED SETTINGS	1. **DRIVE-DRIVEN DISCS MISALIGNED** a. Align discs by following DRIVEN DISC ADJUSTMENTS 1 & 2.
WILL NOT PULL PROPERLY WITH CLUTCH ENGAGED	1. **BELT SLIPPAGE** a. Check for excessive wear on drive and poly V-belts. Replace worn belts.
	2. **DRIVE-DRIVEN DISC RELATED** a. Check for and remove grease or oil from surface of drive disc. b. Rubber driven disc worn or chunked. Replace driven disc. c. Drive spring broken or unhooked. Replace broken or reconnect spring. d. Drive disc grooved. Replace disc or add cover. e. Bearings damaged in drive or driven disc. Replace disc.
	3. **HEX SHAFT RELATED** a. Hex shaft retaining locknut loose. Retighten locknut. b. Hex shaft worn round. Replace hex shaft.
	4. **DIFFERENTIAL RELATED** a. Differential input shaft worn. Disassemble transmission and replace shaft. b. Differential gear damage. Recondition transmission. c. Differential gears or spacers missing. Install missing parts.
	5. **OTHER CAUSES** a. Deck idler assembly spring broken or unhooked. Replace spring or re-connect if not broken. b. Bushings turning inside driven disc hub. Replace disc.

Section IV - OVERHAUL & REPAIR

4.1 TRANSMISSION TESTS - SELF-PROPELLED MODELS

A. If the drive wheels will not pull mower properly with clutch engaged, the cause may NOT be a faulty transmission. (Refer to Trouble Shooting Guide in SECTION III for possible causes).

B. TO TEST TRANSMISSION:

1. Raise rear of mower and place a block under deck to allow rear wheels to turn freely.

2. Turn input pulley on transmission and observe rear wheels.
   (a) Both wheels should turn in ***same direction*** or wheel with least resistance will turn as the pulley is turned.

3. Turn both rear wheels in same direction and observe input pulley.
   (a) Pulley should turn when wheels are turned.

4. Hold input pulley to prevent it from turning.
   (a) Turn one of the rear wheels and observe other wheel.
   (b) The free wheel should rotate in the ***opposite direction*** of the wheel being turned.

5. Hold input pulley and one wheel to prevent them from turning.
   (a) Try turning other wheel. ***No movement*** should occur.
   (b) If movement occurs, axle gears may be slipping on splines around axles.

6. If the desired results are NOT obtained in tests:
   (a) Problem may be internal damage such as broken or missing pinion or axle gears.
   (b) Transmission should either be replaced as a unit or overhauled.

4.2 TRANSMISSION REMOVAL

A. Proceed as follows:

1. Remove capscrew securing differential link bracket. See Figure 4.1.

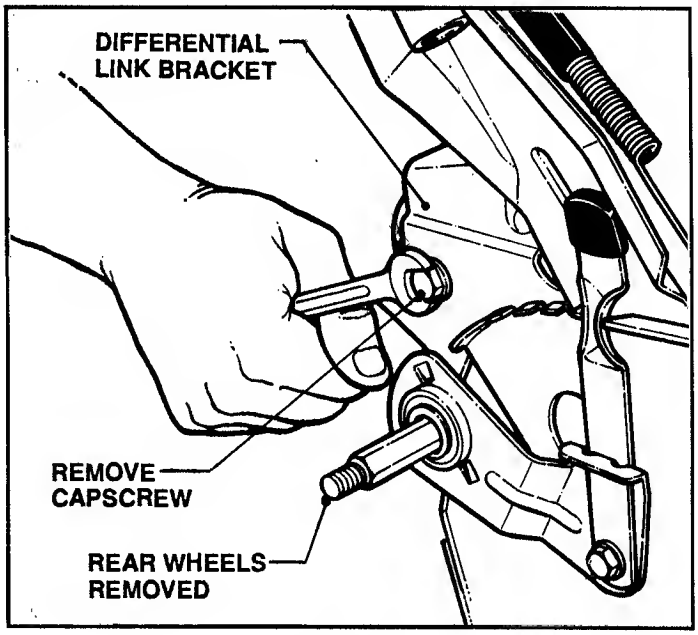


FIGURE 4.1

2. Slip poly v-belt off input pulley.

3. Remove both rear wheels.

4. Remove wheel arm assembly on left side. See Figure 4.1A.

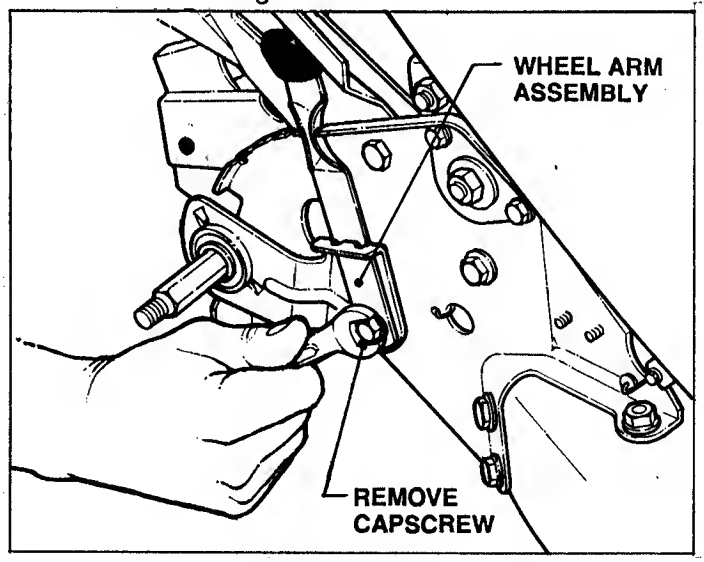


FIGURE 4.1A

5. Remove rear guard.

6. Slide transmission-axle assembly toward the LEFT until short axle clears differential link.

7. Remove transmission from mower.

8. Replace transmission by reversing removal procedure.

Section IV - OVERHAUL & REPAIR

4.3 TRANSMISSION DISASSEMBLY

NOTE:
Carefully inspect parts as they are disassembled and replace damaged or worn parts.

The housings on latest issue transmissions have larger diameter oil seals for improved oil control, larger tapered O.D. bearings for greater wear resistance and redesigned bull gear. Earlier model transmissions with cast gear halves should be rebuilt to the latest design whenever possible.

A. Place Unit on Work Bench and Proceed as Follows.

1. Remove differential bracket and poly v-pulley. See Figures 4.2 & 4.3.

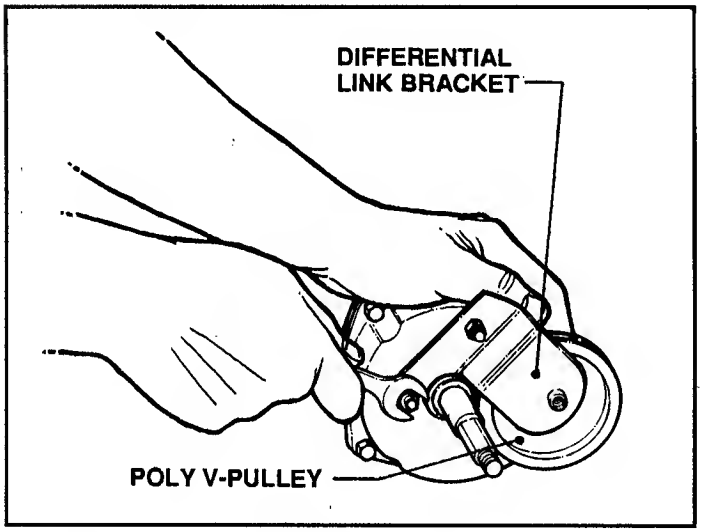


FIGURE 4.2

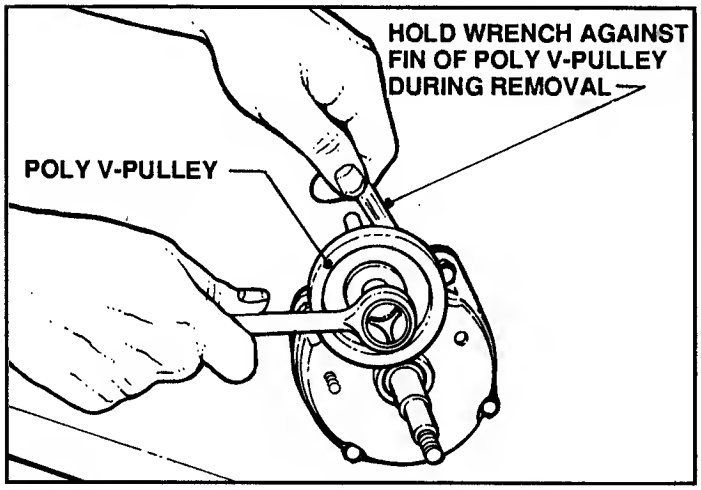


FIGURE 4.3

2. Remove lube plug and housing capscrews.

3. Separate housing halves and let grease drain into suitable container. See Figure 4.4.

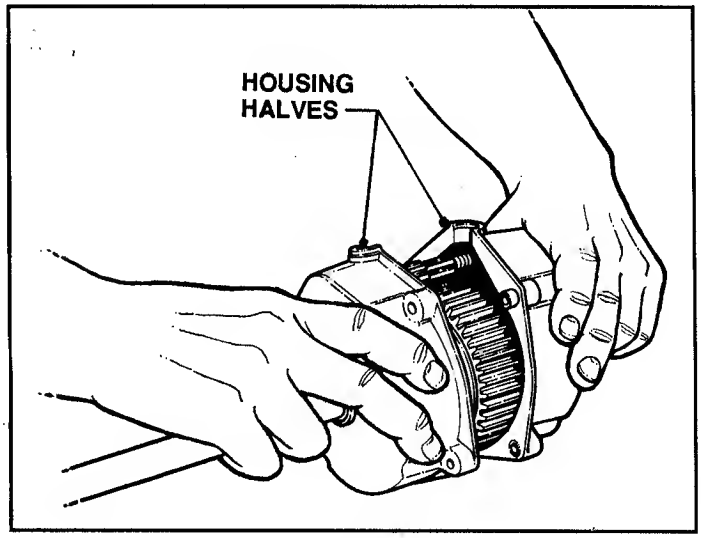


FIGURE 4.4

4. Remove left housing half from axle.

5. Pull input shaft with bearing attached out of housing.

6. Remove right housing half from axle.

7. ***If transmission has a two piece cast bull gear:***

(a) Place unit in vise and drive roll pins out of gear halves.

(b) Shock gear halves lightly to start separation, then pry completely apart with screwdriver.

(c) Disassemble bull gear and discard the components found to be worn or damaged. (Use #60337 Kit on models having cast gear halves).

8. ***Present design transmissions:***

(a) Remove the four plate capscrews.

(b) Disassemble bull gear and discard the components found to be worn or damaged. See Figure 4.5.

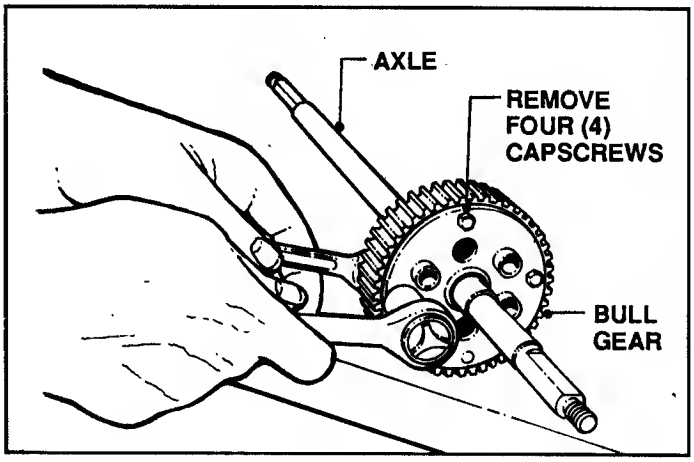
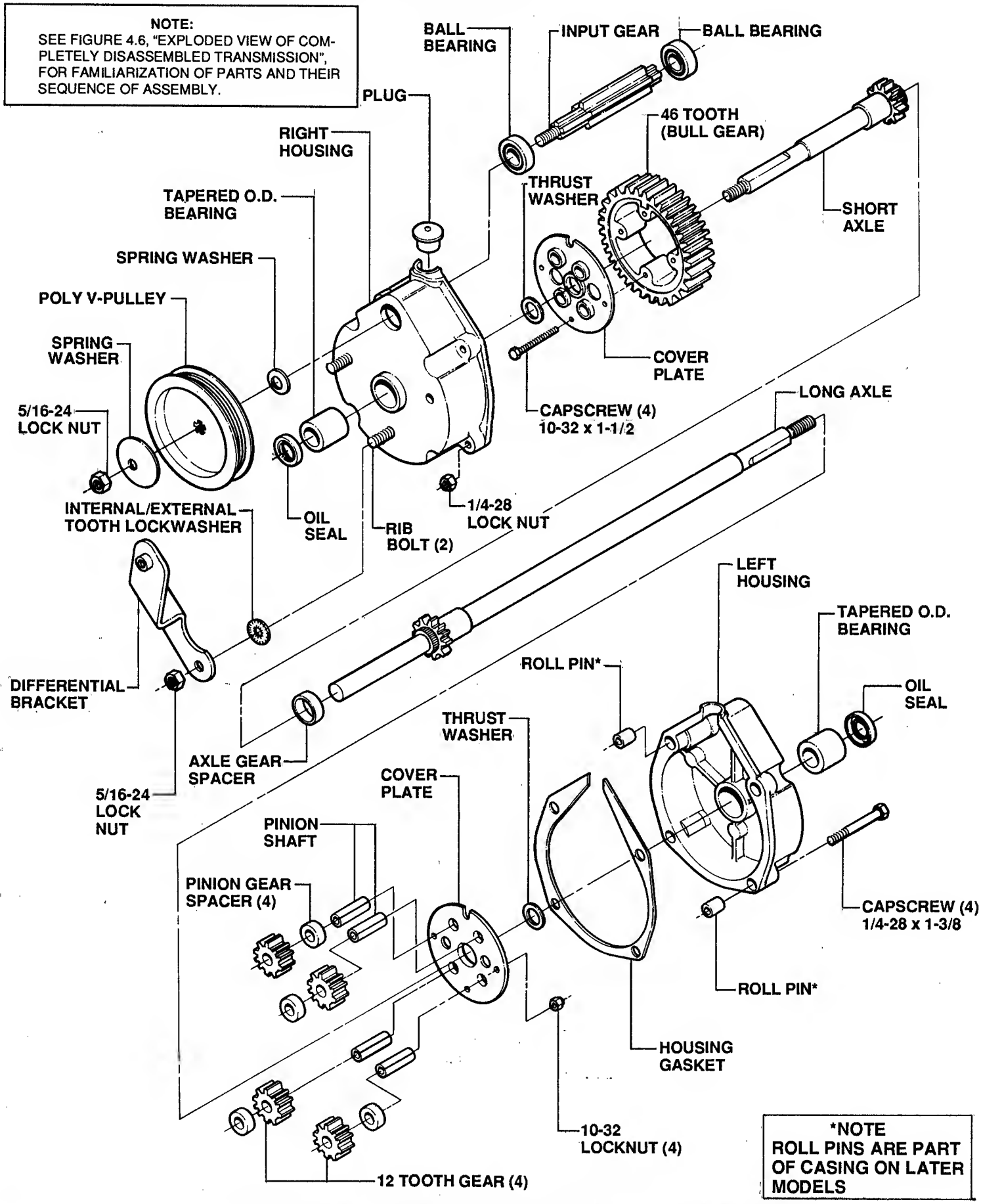


FIGURE 4.5

Section IV - OVERHAUL & REPAIR

NOTE:
SEE FIGURE 4.6, "EXPLODED VIEW OF COMPLETELY DISASSEMBLED TRANSMISSION", FOR FAMILIARIZATION OF PARTS AND THEIR SEQUENCE OF ASSEMBLY.



***NOTE**
ROLL PINS ARE PART OF CASING ON LATER MODELS

EXPLODED VIEW OF COMPLETELY DISASSEMBLED TRANSMISSION
FIGURE 4.6

Section IV - OVERHAUL & REPAIR

4.4 TRANSMISSION REBUILDING

A. BULL GEAR

1. Assemble bull gear in hand or clamp a 2" x 4" board (about 2' long) to a work bench.

2. Drill a 1" hole through board if using. See Figure 4.7.

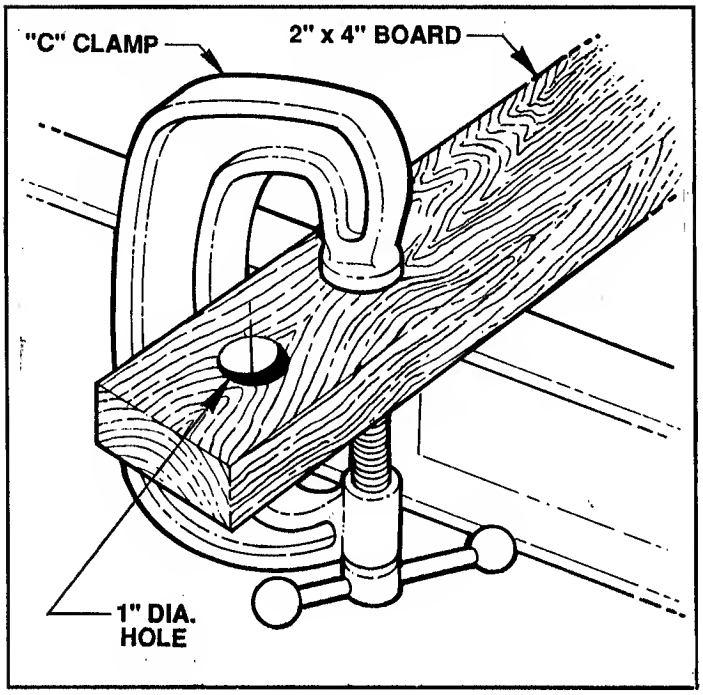


FIGURE 4.7

NOTE:
IN REBUILDING BULL GEAR USE PARTS FROM THE #6-0337 KIT AND AXLES FROM OLD TRANSMISSION, OR INDIVIDUAL PARTS.

3. (FOLLOWING INFORMATION IS APPLICABLE TO **SNAPPER 21C** COMMERCIAL MODELS ONLY!)
Measure diameters of axles just below machined gears. (If 5/8", press one of the #1-2570 bushings into each of two cover plates. If shaft diameter is 3/4", DO NOT use the bushings).

4. If reassembling in hand, insert two of the 4-1/2" long capscrews in one of the cover plates and hold in hand with screws up as shown in Figure 4.8. If using the 2 x 4, install all four capscrews and place plate over hold drilled in the board. Refer to Figure 4.7.

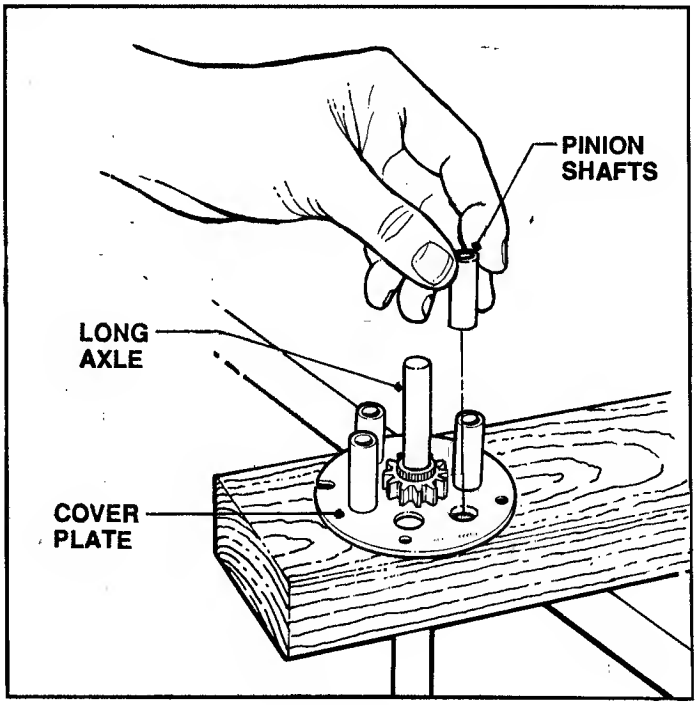


FIGURE 4.8

5. Insert long axle through center hole in plate with pin facing up. Refer to Figure 4.8.

6. Lightly grease the four pinion shafts, then install in cover plate. Refer to Figure 4.8.

7. Install pinion gears and spacers on shafts next. These must be staggered.

8. On shaft indicated as Number 1 in Figure 4.9, install gear first, then spacer.

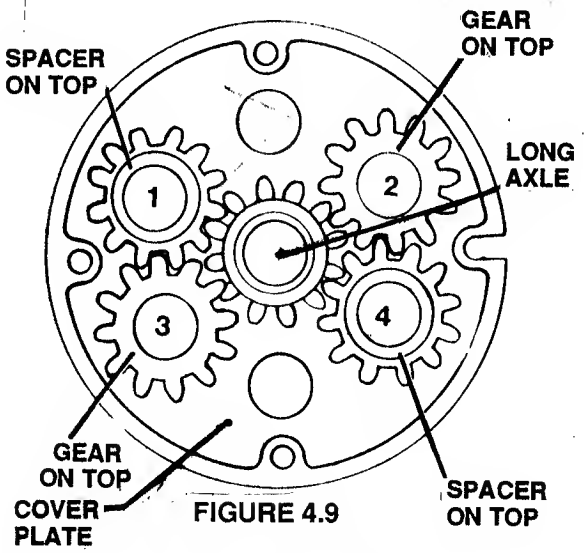


FIGURE 4.9

9. On adjacent shaft (number 2), install spacer first, then gear. When properly positioned, gear-spacer arrangement will be opposite side to side and the same diagonally as shown in Figure 4.9.

10. Install the Axle Gear spacer next to long axle gear around flared portion of axle. See Figure 4.10.

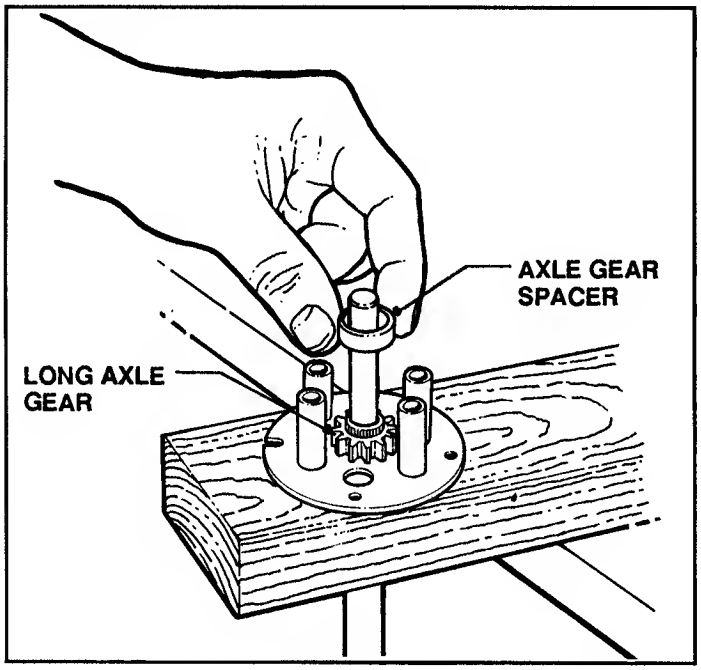


FIGURE 4.10

11. Align raised portion of bull gear over matching slot in cover plate on the board. See Figure 4.11.

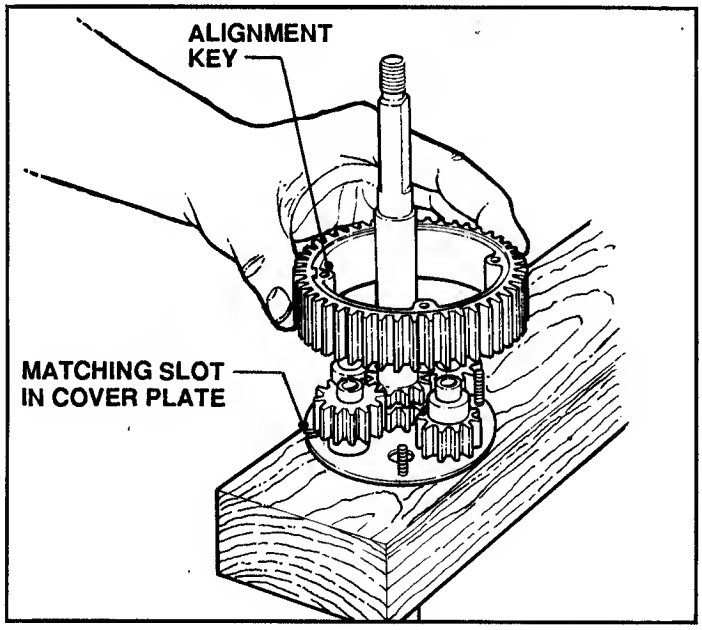


FIGURE 4.11

12. Install gear on plate.

13. Pre-lubricate alignment pin portion of long axle.

14. Slip axle onto pin. See Figure 4.12.

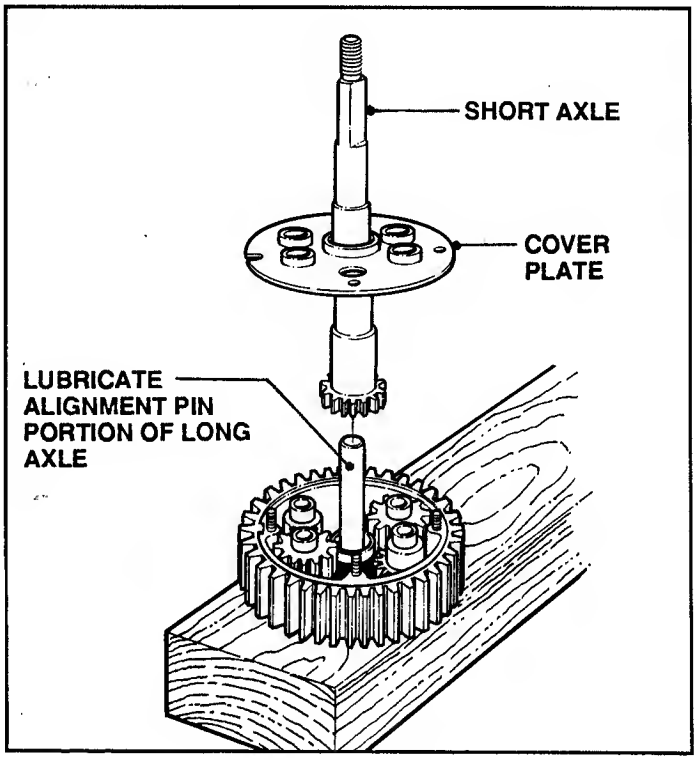


FIGURE 4.12

15. Twist axle to mesh with gears.

16. Install remaining cover plate. Refer to Figure 4.12.

17. Align slot on cover with raised part of bull gear.

18. Secure plate retaining capscrews with #10 hex locknuts.

19. Tighten plate retaining capscrew to 32 Ft. lbs. torque.

20. Test rotate shafts to insure gears mesh properly before installing completed bull gear-axle assembly in transmission housing. See Figure 4.13.

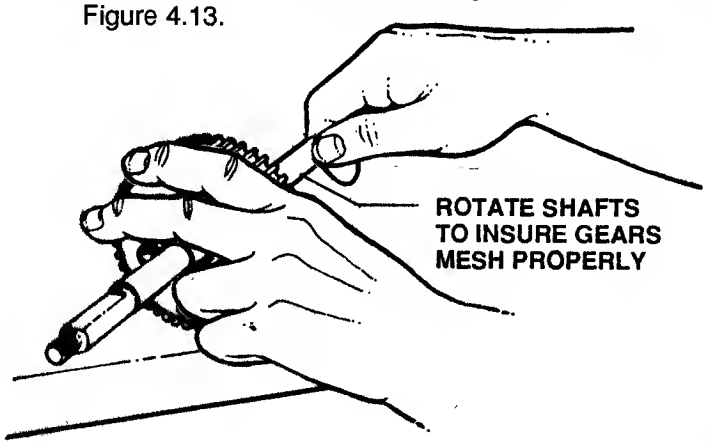


FIGURE 4.13

Section IV - OVERHAUL & REPAIR

B. HOUSINGS:

1. Check bearings and oil seals in right and left differential housings and replace as needed prior to reassembling transmission. Removal and replacement procedure is as follows:
   (a) Drive tapered O.D. axle bearings out of housings from the INSIDE. See Figure 4.14.

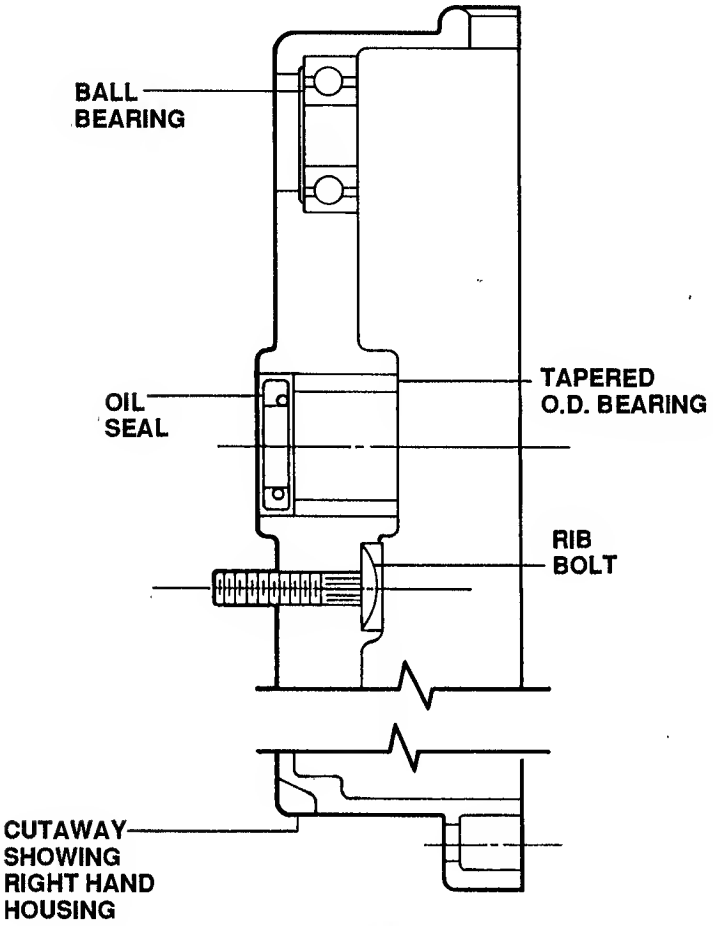


FIGURE 4.14

   (b) Replace new tapered O.D. bearings into housing from the OUTSIDE with a sleeve of appropriate diameter and an arbor press if available.

> **NOTE:**
>
> BALL BEARING FOR INPUT GEAR ON **LEFT** HOUSING SIDE IS A LIGHT PRESS FIT IN THE LEFT HOUSING.

   (c) Press the input shaft ball bearing into the left housing from the INSIDE using a sleeve of appropriate diameter.
   (d) Press the input shaft ball bearing into the right housing from the INSIDE.
   (e) Drive old rib bolts in right housing out toward the INSIDE, preferably using a plastic mallet. Refer to Figure 4.14.

> **NOTE:**
> FAULTY OIL SEALS MAY BE REPLACED **WITHOUT** DISASSEMBLING TRANSMISSION. HOWEVER, TRANSMISSION MUST BE REMOVED FROM MOWER TO REPLACE SEALS.

2. Removing Oil Seals:
   (a) Pry faulty oil seals out of recess in right and left housings with a punch or other suitable tool without damaging seating surfaces. See Figure 4.15.

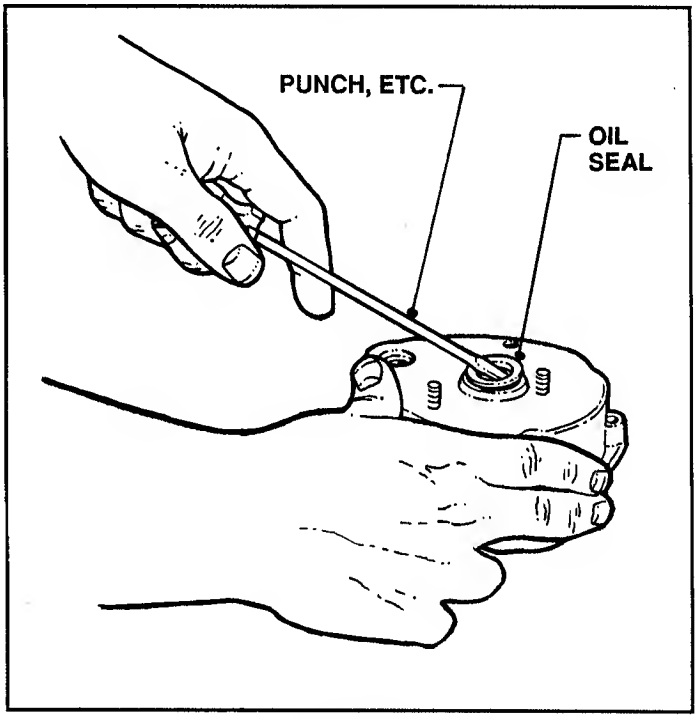


FIGURE 4.15

   (b) Sand off burrs, sharp edges or paint buildup on axles with an emery cloth.
   (c) Grease axle shafts.
   (d) Install seal sleeves over shafts.

3. Replacing Oil Seals:
   (a) Install replacement seals carefully into position.
   (b) Press or drive seal into housing, using a seal driver of appropriate dimensions. See Figure 4.16.
   (c) Lightly grease seals with **SNAPPER 00** grease.

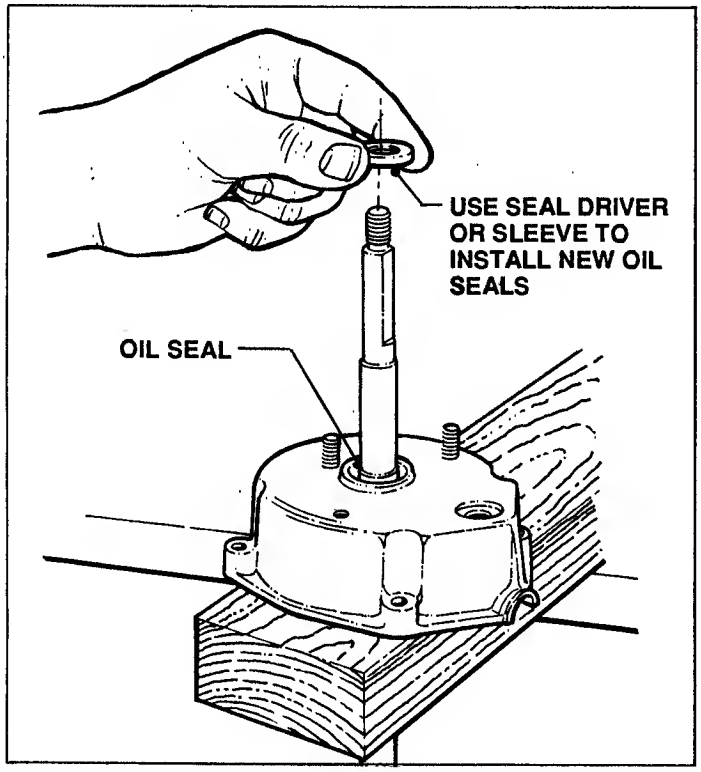


FIGURE 4.16

4.5 TRANSMISSION REASSEMBLY

A. Procedure Is As Follows:

1. Insert two roll pins in the left housing.
2. Install new housing gasket.
3. Grease axle bushing.
4. Install one of two thrust washers on bushing. See Figure 4.17.

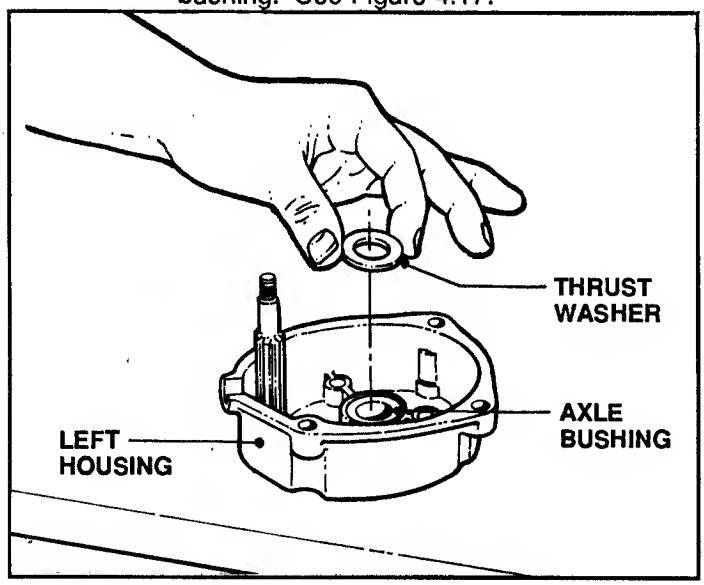


FIGURE 4.17

5. Use an emery cloth to sand burrs,sharp edges or pain buildup from axles.
6. Install seal sleeve of appropriate diameter over long axle.
7. Install seal using a seal driver of appropriate dimensions.
8. Lightly coat seal with **SNAPPER 00** grease.
9. Grease axles and guide long axle through seal in left housing with seal driver. See Figure 4.18.

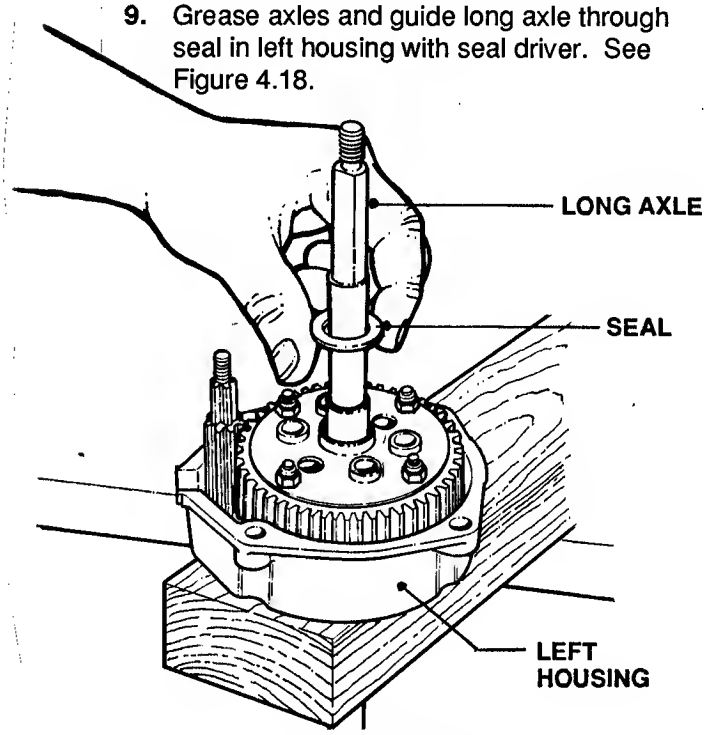


FIGURE 4.18

10. Seat bull gear in right housing.
11. Insert remaining thrust washer over short axle.
12. Place seal sleever over short axle.
13. Install seal, using a seal driver of appropriate dimensions.
14. Lightly coat seal with **SNAPPER 00** grease.
15. Guide right housing into position on left housing. See Figure 4.19.

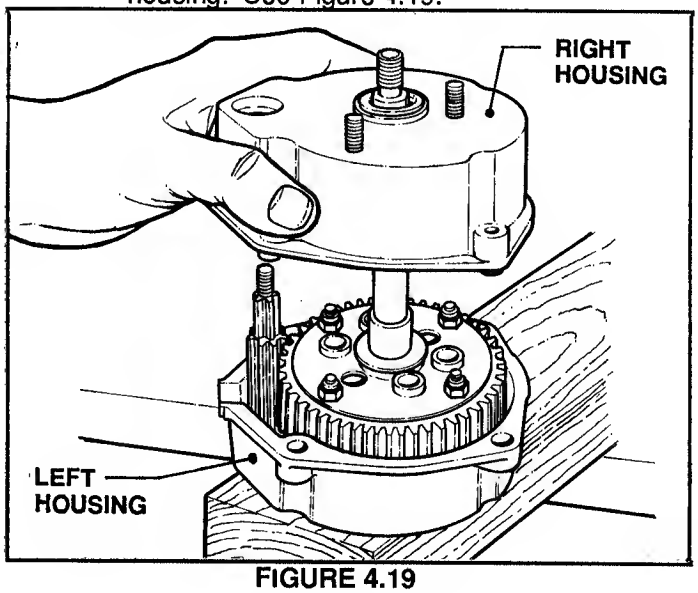


FIGURE 4.19

16. Install the four 1 3/8" housing capscrews.

17. Secure locknuts.

18. Place spring washer on input shaft. See Figure 4.20.

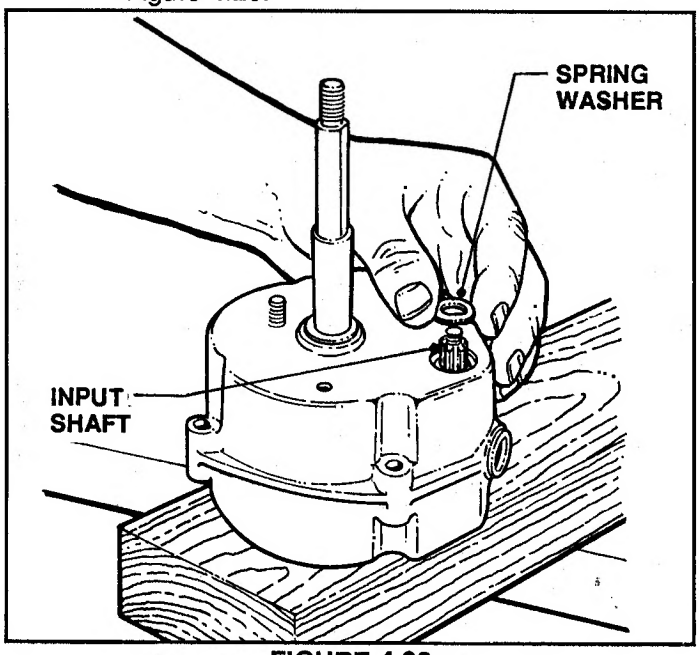


FIGURE 4.20

19. Install poly v-pulley, large spring washer and retaining nut. See Figure 4.21.

NOTE:
ALWAYS USE A SEAL SLEEVE WHEN INSTALLING NEW OIL SEALS. IF NONE ARE AVAILABLE, SMOOTH AXLE EDGES BY APPLYING TAPE, AND CAREFULLY GUIDE SEAL OVER TAPED AREAS.

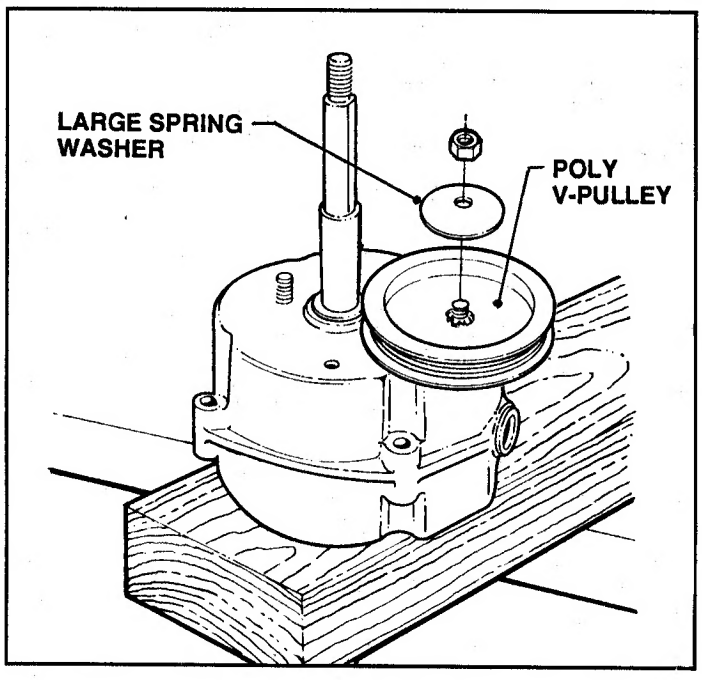


FIGURE 4.21

20. Block fins on underside of pulley with wrench and tighten retaining nut.

21. Place an internal-external tooth lockwasher over both of the rib neck bolts protruding from the right housing. See Figure 4.22.

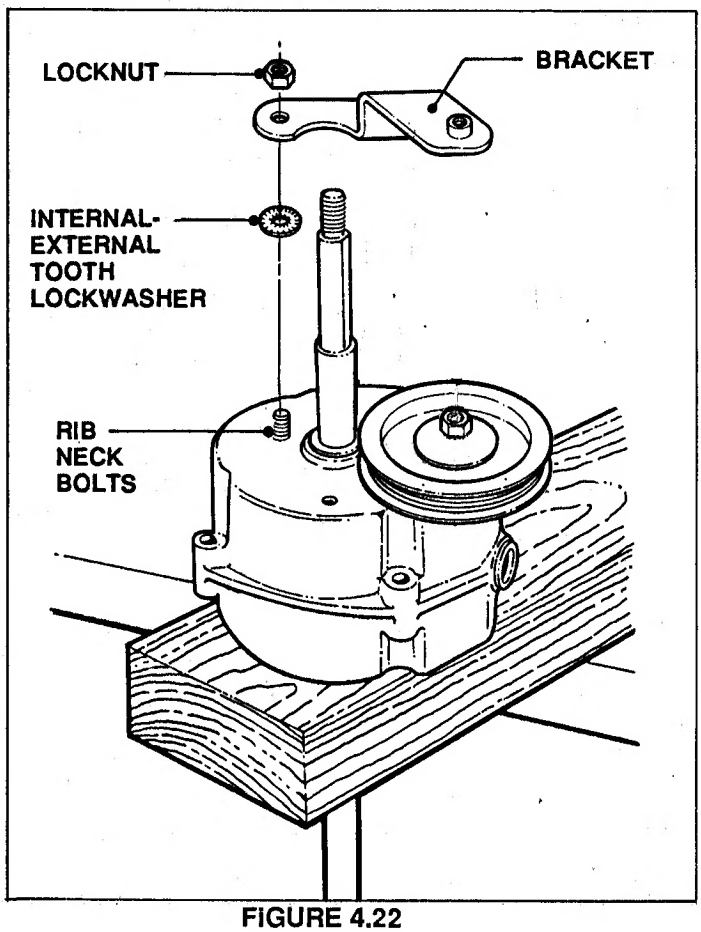


FIGURE 4.22

22. Position differential bracket onto rib neck bolts.

23. Secure differential bracket with locknuts. Tighten not more than 17 foot pounds with torque wrench.

24. Apply 4 oz. of **SNAPPER 00** grease to housing plug opening and push housing plug into housing.

25. Reinstall unit into mower by reversing procedure described on page .

4.6 REPLACEMENT OF BLADE BRAKE & CLUTCH (BBC) UNIT

A. To Remove BBC Unit

1. Disconnect spark plug lead.
2. Back blade with piece of wood to prevent turning.

SERVICE NOTE

As shown in Figure 4.24, the holes in the flywheel and bowl will line up. A drift pin or screwdriver can be inserted in the holes to lock the two components together. This helps when installing or removing the CLUTCH MOUNTING BOLT in the end of the crankshaft.

SERVICE NOTE
(APPLICABLE TO NEW SERIES BOWLS ONLY)

The following tag is found affixed by a rivet to the underside of new series bowls.

IMPORTANT! REMOVE RIVET AFTER ASSEMBLING BLADE MATIC TO MOWER

This rivet is used to lock the brake band in open position for aid in assembly and alignment. Remove after assembly and before use of mower by putting slight pressure on brake arm and pulling on tag. Discard tag and rivet.

160448

3. Remove retaining capscrews and washers, then separate blade from CLUTCH BEARING ASSEMBLY.
4. Remove CLUTCH MOUNTING BOLT, LOCKWASHER and BLADE WASHER from CLUTCH SUB-ASSEMBLY. See Figure 4.23.

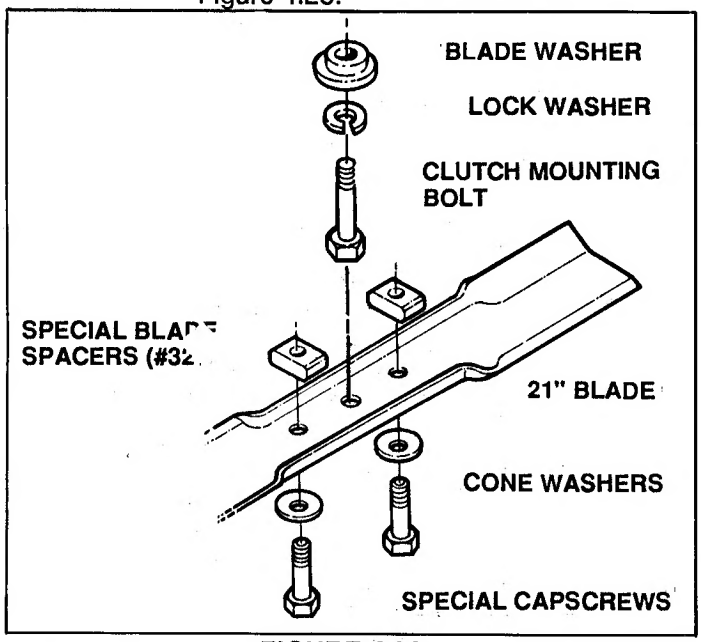


FIGURE 4.23

5. Remove clutch and bearing assembly.
6. Remove BLADE CONTROL spring from brake lever arm.
7. Remove nuts and lockwashers from BOWL & BRAKE ASSEMBLY. See Figure 4.24.
8. Remove BOWL & BRAKE ASSEMBLY from STANDOFFS.

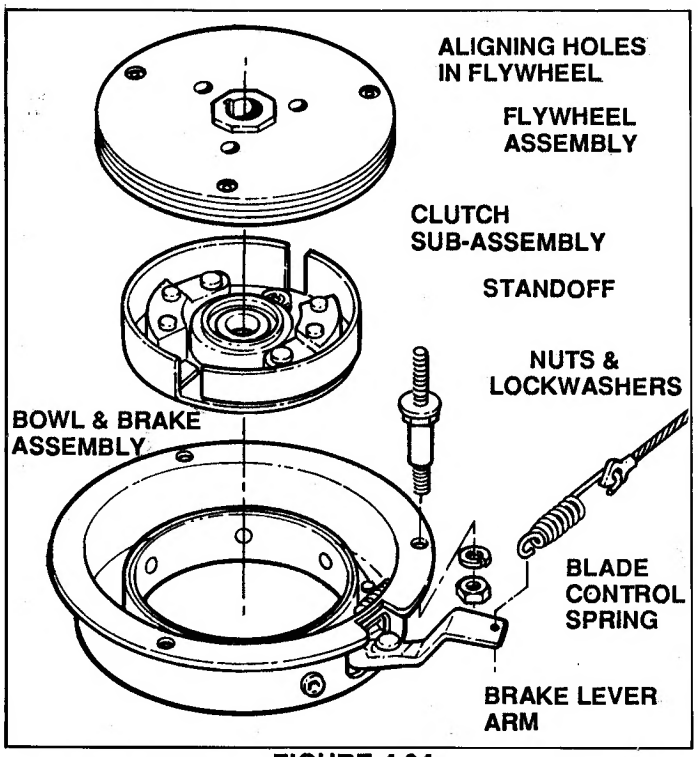


FIGURE 4.24

B. To Replace BBC Unit

1. Install FLYWHEEL ASSEMBLY and Woodruff Key on engine crank.
2. Install CLUTCH SUB-ASSEMBLY on pilot shaft of FLYWHEEL.
3. Install on STANDOFFS with lockwashers and nuts.
4. Reinstall BLADE CONTROL spring.
5. Install CLUTCH MOUNTING BOLT and washers. Torque bolt to 35 ft. lbs. setting.
6. Reinstall blade (Refer to Figure 4.23). Torque capscrews to 20/30 FT./LBS.
7. Reconnect BLADE CONTROL SPRING to BRAKE LEVER arm.
8. Check free travel of BALL SLUG inside BLADE CONTROL SPRING for correct movement. See Figure 4.25.

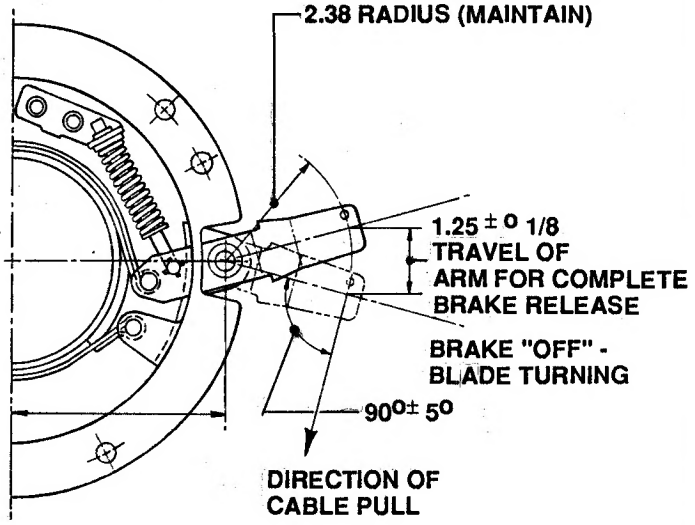


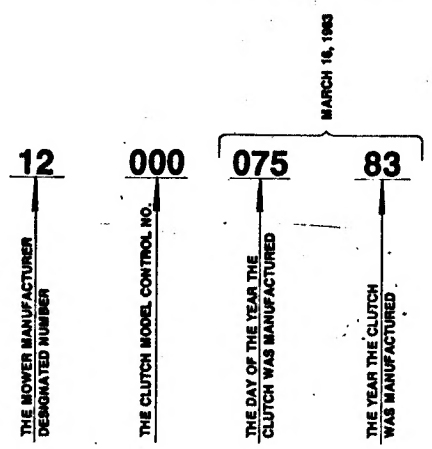
FIGURE 4.25

CONTINUED →

NOTE
CONTROL CABLE MUST ALWAYS HAVE FREE TRAVEL. IF NOT, BRAKE BAND IS WORN TOO MUCH AND NEEDS TO BE REPLACED.

9. Disengage brake by pulling BLADE CONTROL up firmly against handle.
10. Check travel of BLADE BRAKE ARM for correct movement. Adjust if required. See Figure 4.25.

EXPLANATION OF THE IDENTIFICATION NUMBER STAMPED ON THE BOTTOM OF THE CLUTCH ASSEMBLY BOWL

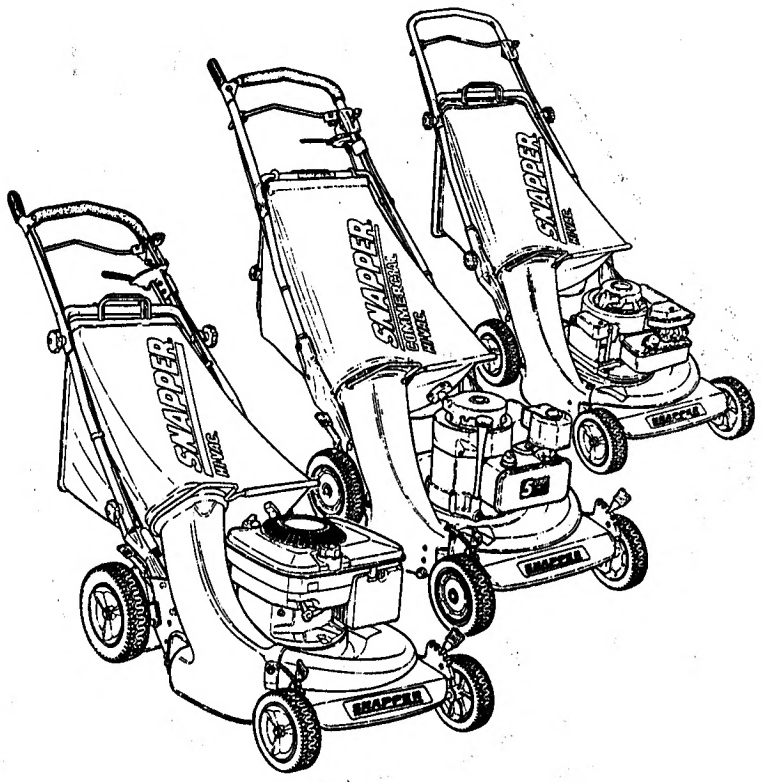


NOTES

Service Manual for

SNAPPER®

WALK BEHIND MOWERS



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SNAPPER POWER EQUIPMENT
McDonough,GA•30253
FUQUA INDUSTRIES Company

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